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# **NAVAL POSTGRADUATE SCHOOL**

**MONTEREY, CALIFORNIA**

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## **MBA PROFESSIONAL REPORT**

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**The Economic Costs of Reserve Forces Utilization:  
An Analysis of Their Employment  
in Fighting the Global War on Terrorism**

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**By: Craig L. Harvey, and  
Charles W. Ryan  
December 2007**

**Advisors: Raymond Franck,  
Elda Pema**

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**THE ECONOMIC COSTS OF RESERVE FORCES UTILIZATION:  
AN ANALYSIS OF THEIR EMPLOYMENT IN FIGHTING  
THE GLOBAL WAR ON TERRORISM**

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Submitted in partial fulfillment of the requirements for the degree of

**MASTER OF BUSINESS ADMINISTRATION**

from the

**NAVAL POSTGRADUATE SCHOOL  
December 2007**

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# **THE ECONOMIC COSTS OF RESERVE FORCES UTILIZATION: AN ANALYSIS OF THEIR EMPLOYMENT IN FIGHTING THE GLOBAL WAR ON TERRORISM**

## **ABSTRACT**

This project offers a model useful for estimating the social cost of U.S. Reserve Forces and National Guard employment alternatives in support of the Global War on Terrorism (GWOT). We consider two specific alternatives in this report: (1) the operational force (status quo) and (2) increasing Active Duty Force end strength and keeping Reserve Forces as a “strategic” reserve. We assume both alternatives are equal in effectiveness. Each alternative provides certain benefits and costs to American society. We also accept a budgetary cost estimate of \$533 billion from the Congressional Budget Office’s (CBO) Assistant Director for Budget Analysis. We then focus on the social costs of these alternatives. We conclude that the social cost of Alternative 1 exceeded Alternative 2 by nearly \$50 billion from 2001 to 2006.



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# I. INTRODUCTION

## A. GENERAL

Following the end of the Korean War in July 1953, the United States adopted a policy of maintaining its National Guard and Reserve Forces as a strategic reserve. This Cold War-focused force in readiness was maintained with the intent to mobilize in case of a major armed conflict. During the Vietnam War, the Reserves and National Guard were called upon for limited assistance with the war effort. Instead, the active duty component was increased through more aggressive recruiting and through the draft. The Total Force Policy implemented in 1973 maintained this strategic reserve focus, evidenced by such measures as the Army's Roundout Brigades, embedded National Guard units within Army divisions and capable of mobilization for wartime service.

The 1991 Persian Gulf War tested America's force in readiness. Because the "hot" war lasted only two months (January and February), the Reserve Forces were quickly mobilized then de-mobilized mostly within the year. The brevity of Reserve and National Guard employment during the Persian Gulf War and the extremely limited number of combat casualties did little to illuminate the potential costs of their call up. Some of the costs associated with the National Guard and Reserves during this conflict could be considered transfers. Transfer costs are passed to a different stakeholder in society, benefiting one at the expense of another. As Mishan (1973) notes, "to the economy as a whole they are neither costs nor benefits; only a part of the pattern of distributing the aggregate product."<sup>1</sup>

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<sup>1</sup> E.J. Mishan. *Economics for Social Decisions: Elements of Cost-Benefit Analysis* (New York, NY: Praeger Publishers, Inc., 1973), 60. Mishan further notes that "in undertaking a cost-benefit analysis the economist must be careful to exclude them from the relevant magnitudes. In our analysis, we identify those impacts we consider transfers and exclude the amounts from the final CBA comparison.



When the Al-Qaeda terrorist network claimed responsibility for the attacks on September 11, 2001, it posed a clear threat to American security. Al-Qaeda's connection with the Taliban government in Afghanistan offered a tangible target that the United States could attack in an attempt to eradicate the powerful terrorist network.

Soon, the United States would expand its focus to Iraq. As Saddam Hussein refused to cooperate with United Nations weapons inspectors, and reports accumulated about Al-Qaeda groups being trained and supported in Iraq, the United States set out to oust Saddam Hussein and clear Iraq of potential terrorists and weapons of mass destruction.

The invasion of Iraq (March 20, 2003) and the quick ouster of Saddam Hussein began a long conflict. With the two-front war straining the active duty manpower pool, the National Guard and Reserves were increasingly called upon to relieve the stress. Over the past five years, the Global War on Terrorism (GWOT) has far exceeded early cost estimates and is significantly affecting American society. Part of the cost is associated with the employment of the Reserve Forces, who are often subject to multiple deployments.

Since the creation of the All-Volunteer Force in 1973, our nation's Reserve Forces have played an ever-increasing role in our military's overall force posture. If senior policy makers are to make informed choices, a grounded understanding of the costs associated with our Reserve Forces is paramount.

Our intent in this project is to provide a useful model to capture the social costs of Reserve Force employment. We will provide two mutually exclusive alternatives based on the nature of Reserve Forces utilization: (1) employing the Reserve Forces as an operational force and (2) increasing the Active Duty Force while keeping the Reserve Forces as a strategic reserve force. Each alternative consists of certain benefits and costs to society. We have structured the two alternatives to be (about) equal in capability. We therefore focus on social costs.

However, we offer no specific recommendations regarding structure or missions for Reserve Forces, since policy makers must also consider factors outside of the scope of this project.

## **B. OBJECTIVES OF THE RESEARCH**

The main objective of this project is to answer the question: What are the relative social costs of (1) the current policy of employing the U.S. military Reserve Forces as an operational force and (2) increasing active duty end strength to meet the manpower requirements of the Global War on Terrorism while keeping the Reserve Forces as a supporting force in readiness?

The project will also consider the following secondary questions:

- 1) What is the current Total Force Structure (Alternative 1)?
- 2) What would the Total Force Structure be if the Reserve Forces were kept as a supporting reserve (Alternative 2)?
- 3) What are the budgetary costs associated with the alternatives?
- 4) What are the non-budgetary social costs associated with both alternatives?
- 5) What social costs are mainly transfers?

## **C. METHODOLOGY**

To fully understand the costs and benefits of employing United States Reserve Forces (USRF) to support the Global War on Terrorism, it is helpful to use a carefully structured, methodical approach. Cost-benefit analysis (CBA) provides “a systematic cataloguing of impacts as benefits (pros) and costs (cons), valuing in dollars (assigning weights), and then determining the net

benefits of”<sup>2</sup> a policy decision. While all models are typically flawed in some way, we hope that the CBA model we develop can usefully inform public policy decisions.

We consider the Reserves and National Guard as a whole as our unit of analysis—which we call United States Reserve Forces (USRF). We will develop a quantitative analysis, even though many of the costs associated with the war effort are uncertain and potentially contentious. Nonetheless, we consider CBA to be a useful paradigm, in that it causes one “to think hard about categories of benefits and costs, to define expectations about outputs, and to pay attention to the tradeoffs implicit in decisions.”<sup>3</sup> A CBA construct, informed by a variation of Boardman’s “Major Steps in CBA”,<sup>4</sup> is a relatively simple approach to understanding the impacts of USRF employment on American society.

Accordingly, we focus on Boardman’s first five steps, which get to the model-building aspects of CBA methodology. Specifically, the first five steps include (1) specifying the set of alternative policies; (2) deciding who has standing; (3) cataloguing the impacts and selecting measurement indicators; (4) predicting the impacts quantitatively over the life of the policy; and (5) monetizing all impacts. Because many costs associated with the war are inherently debatable, this analysis is not especially concerned with gathering precise data or providing a recommended course of action, but rather in applying CBA methodology as a normative tool.

We offer an *ex post* CBA, which is conducted after a policy has been implemented and results are discernable; i.e., we are analyzing what we classify as the operational Reserve Forces policy employed over a five year period from 2001–2006. The advantage of this approach (relative to an *ex ante* CBA

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<sup>2</sup>Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer. *Cost-Benefit Analysis: Concepts and Practice. Third Edition* (Upper Saddle River, NJ: Pearson Prentice Hall, 2006), 1.

<sup>3</sup> Edith Stokey and Richard Zeckhauser. *A Primer for Policy Analysis* (New York, NY: W. W. Norton & Company, Inc., 1978), 135.

<sup>4</sup> Boardman, *Cost-Benefit Analysis*, 8.

conducted prior to a policy decision) is the availability of more observed data. As Boardman et al., point out, this type of CBA is useful, both as a decision-making and as an evaluative tool.<sup>5</sup> Additionally, what we denote as “USRF in strategic reserve” serves as the alternative policy to the Administration’s “operational Reserve Forces” policy.

Our major sources include numerous academic and governmental studies, from the RAND Corporation, The American Enterprise Institute (AEI), the Congressional Budget Office (CBO), Congressional Research Service (CRS), and the National Bureau of Economic Research. Also academic literature from journals such as Berkley’s Electronic Press, and publications such as *The Economist*. These sources provide reasonably thorough analysis of the costs of war, Total Force Policy, and the costs of utilizing the Reserve Forces, but they do not necessarily focus on alternative policy decisions. We assess these sources in Chapter II as part of our literature review.

#### **D. ORGANIZATION OF THE PROJECT**

This project consists of five chapters.

Chapter I offers an introduction to the subject. The remaining chapters address the primary research question as well as the secondary questions.

Chapter II provides background on the research topic including a review of existing literature on the evolution of Total Force Policy, the costs associated with the Global War on Terrorism, and policy and cost decisions specific to reserve utilization.

Chapter III presents the research methodology employed for this paper.

Chapter IV offers an examination of the numbers developed in our analysis by employing our methodological approach developed in Chapter III.

Chapter V includes the summary, conclusion, and recommendations for further study.

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<sup>5</sup> Boardman, *Cost-Benefit Analysis*, 3.

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## **II. LITERATURE REVIEW**

### **A. OVERVIEW**

A review of literature that is pertinent to evaluating the costs and benefits of employing the Reserve Forces in support of the GWOT reveals three main themes. First is the “Cost of War” literature. The second theme is “Total Force Policy”. Finally, we summarize and synthesize more specific discussions on the costs of employing the Reserves and the National Guard, which we refer to collectively as Reserve Forces (USRF).

### **B. COSTS OF WAR**

#### **1. Introduction**

Leading up to the start of the Iraq conflict in March 2003, there were few debates over the true cost of the war. The few estimates attempted were restricted to budgetary costs; social costs were not considered. As the war continued, many Americans began questioning the true costs of the war, with budgetary cost estimates exceeding \$500 billion by the start of 2007<sup>6</sup> and economic cost estimates ranging from \$500 billion to over \$2 trillion. Several economists have attempted to provide a deeper understanding of this debate by exploring the larger economic cost of the Iraq War.

This section examines several of these arguments. First, a pre-invasion (December 2002) working paper was presented by Yale University’s William Nordhaus entitled *The Economic Consequences of a War with Iraq*.<sup>7</sup> After the invasion, Scott Wallsten and Katrina Kosec, both with the AEI-Brookings Joint Center for Regulatory Studies, produced a September 2005 working paper

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<sup>6</sup> Amy Belasco. *The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations since 9/11* (Washington DC: Congressional Research Service, 2006).

entitled *The Economic Costs of the War in Iraq*.<sup>8</sup> Next Steven Davis, Kevin Murphy, and Robert Topel, all of the University of Chicago, presented *War in Iraq versus Containment* at the CESifo Conference on “Guns and Butter: The Economic Causes and Consequences of Conflict” in Munich, Germany in December 2005.<sup>9</sup> Finally, Joseph Stiglitz of Columbia University and Linda Bilmes of Harvard University presented a working paper, *The Economic Costs of the Iraq War: An Appraisal Three Years after the Beginning of the Conflict*,<sup>10</sup> introduced at the Allied Social Science Association meetings in Boston, Massachusetts during January 2006.

The following section of this paper reviews the key academic works, which go beyond common budgetary cost assessments, and which represent the cost of war literature.<sup>11</sup> This review of the existing academic works is organized by the major parts of each discussion:

- 1) A review of budgetary war costs presented by each publication.
- 2) An analysis of the research questions presented.
- 3) An examination of the theoretical base each author presented.
- 4) An overview of the methodologies employed.
- 5) A discussion of the results presented by each work.

All but the Nordhaus article were written well after the start of the war. Of the four studies, both the Wallsten and Kosec study and the Bilmes and Stiglitz

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<sup>7</sup> William D. Nordhaus. *The Economic Consequences of a War with Iraq* (Cambridge, MA: National Bureau of Economic Research, 2002).

<sup>8</sup> Scott Wallsten and Katrina Kosec. *The Economic Costs of the War in Iraq* (AEI-Brookings Joint Center Working Paper, 2005).

<sup>9</sup> Steven J. Davis, Kevin M. Murphy, and Robert H. Topel. "War in Iraq Versus Containment." Munich Germany, December 9 and 10, 2005.

<sup>10</sup> Linda Bilmes and Joseph Stiglitz. *The Economic Cost of the Iraq War: An Appraisal Three Years After the Beginning of the Conflict* (Cambridge, MA: National Bureau of Economic Research, February 2006).

<sup>11</sup> For a detailed look at a current budgetary cost perspective of the Iraq war, see Belasco, *The Cost of Iraq*.

study stand out as core documents and receive somewhat deeper analysis in this paper.<sup>12</sup> All of the authors seek to provide an analytical framework for the policy debate by assessing the war's economic costs and providing policy makers with a better understanding of the cost-benefit calculus of the war. As this analysis of the literature reveals, they largely accomplish this goal.

## **2. Budgetary Costs of the War**

Much debate about the actual budgetary costs of the War on Terror plagues the United States Congress. It has proven difficult to tally these costs because they are represented as both regularly appropriated defense funds established in annual appropriations bills and as supplemental budget allocations that Congress has approved incrementally. In her CRS Report to Congress, Belasco reveals discrepancies in war cost reporting as the “CRS, CBO, and GAO have all found various discrepancies in DoD figures — including understating budget authority and obligations, mismatches between BA and obligations data, double-counting of some obligations, questionable figures, and a lack of information about basic factors that affect costs such as troop strength or operating tempo metrics.”<sup>13</sup> Cordesman claims that “There is no way to do more than guess at the ultimate cost of the Iraq War, Afghan War, and war on terrorism.”<sup>14</sup> Nevertheless, a few economists have presented many different compelling arguments offering total budgetary cost of war estimates. Several estimates are considered in the following paragraphs that can be drawn upon to guide us to a generally acceptable estimate.

There are many varied estimates of the total budgetary cost of the War on Terror, including estimates from non-governmental organizations. In their AEI-

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<sup>12</sup> We do not mean to detract from the importance of the Nordhaus and Davis et al. pieces, but we do wish to reflect the comprehensiveness and relevance of the standout works that the former two sets of authors present.

<sup>13</sup> Belasco, *The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations*, 26.

<sup>14</sup> Anthony H. Cordesman. *The Uncertain Cost of the Iraq War* (Washington, D.C.: Center for Strategic and International Studies, 2006), 4.



Brookings Working Paper “The Economic Costs of the War in Iraq” Scott Wallsten and Katrina Kosec estimate the budgetary cost of war in Iraq to be \$213 billion to 2005.<sup>15</sup> By March 2006, Joseph Stiglitz argued that the lifetime disability and healthcare costs for wounded veterans as well as increased recruiting and retention costs must be considered when he posited that the federal “budgetary costs (exclusive of interest) amount to \$652 billion.”<sup>16</sup> The Washington Post asserted that Congress “approved more than \$609 billion” for the War on Terror as of May, 2007.<sup>17</sup> Stiglitz professes that “looking purely at direct budgetary costs to the taxpayer, we estimate that the total cost of the Iraq war is in the range of \$750 billion to \$1.2 trillion.”<sup>18</sup>

Several government agencies have also estimated war costs. A 2007 GAO report identifies total defense spending in support of the Global War on Terrorism to be about \$454 billion.<sup>19</sup> Amy Belasco in her March 2007 CRS Report for Congress argues that “Congress has appropriated about \$510 billion in Budget Authority (BA) thus far for Iraq, Afghanistan and enhanced security for DoD, the State Department and the Department of Veteran’s Affairs.”<sup>20</sup> Belasco breaks down the funding by operation, which includes \$378 billion to support the war in Iraq, \$99 billion for anti-terrorism operations in Afghanistan and elsewhere, \$27 billion for security improvements, and over \$5 billion that she could not allocate.<sup>21</sup>

Robert Sunshine, the Congressional Budget Office’s (CBO) Assistant Director for Budget Analysis provided perhaps the most compelling estimate in

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<sup>15</sup> Wallsten, *The Economic Costs of the War in Iraq*, 6.

<sup>16</sup> Joseph Stiglitz “The High Cost of the Iraq War.” *The Economists' Voice* 3, no. 3, 2006: Article 5-N/A, 2.

<sup>17</sup> Lori Montgomery. “The Costs of the War, Unnoticed.” *The Washington Post* May 8, 2007, sec. D.

<sup>18</sup> Bilmes, *The Economic Cost of the Iraq War*, 5.

<sup>19</sup> Sharon Pickup. *Global War on Terrorism: Reported Obligations for the Department of Defense*. (Washington, D.C.: United States Government Accountability Office, May 18, 2007), 4.

<sup>20</sup> Belasco, *The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations*, 3.

<sup>21</sup> *Ibid.*

his testimony to Congress in July 2007. Sunshine argued, “since September 2001, lawmakers have provided \$602 billion in budget authority specifically for military and diplomatic operations in Iraq, Afghanistan, and other regions in support of the war on terrorism, and for veterans’ benefits and services.”<sup>22</sup> The CBO further breaks down war costs to \$533 billion spent on military operations and other defense activities, \$30 billion to pay for equipping and training native security forces, \$39 billion for diplomatic operations and foreign aid, and \$3 billion for additional veterans’ benefits including medical care, disability compensation, survivor benefits, and troop readiness.<sup>23</sup>

To reduce the complexity of defining the economic costs of employing Reserve Forces in the Global War on Terrorism, we will accept Sunshine’s estimate of \$602 billion in direct war costs and specifically, \$533 billion for military operations. By accepting his estimate, we can focus on the social costs of employing Reserve Forces without being bogged down within budgetary cost arguments.

### **3. Revealing the Research Problem**

Nordhaus’ study was the first to conduct an *ex ante*<sup>24</sup> examination of the potential economic costs of the looming war in Iraq. Given that previous administrations have historically underestimated the costs of the nation’s wars prior to undertaking them,<sup>25</sup> Nordhaus broke ground in the current conflict by providing evidence that proclaimed costs of the conflict were being grossly underestimated. His study meant to ameliorate the lack of analytical foundation

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<sup>22</sup> Robert A. Sunshine. Sworn Testimony before the Committee on the Budget, U.S. House of Representatives. *Estimated Costs of U.S. Operations in Iraq and Afghanistan and of Other Activities Related to the War on Terrorism*. Congressional Budget Office, July 31, 2007, 2.

<sup>23</sup> Ibid, 3.

<sup>24</sup> In the cost-benefit analysis literature, there are three basic types of analysis: *ex ante*, *in media res*, and *ex post*. They represent before, during, and after viewpoints of policy decision-making.

<sup>25</sup> Robert D. Hormats *The Price of Liberty*. New York: Times Books, 2007.

for estimates then offered. While he posits that his estimates are wrong due to the fog of war, he quotes Keynes that "*it is better to be vaguely right than precisely wrong.*"<sup>26</sup>

Despite Nordhaus' pre-war effort, little analysis was conducted following the start of the war. Consequently, Wallsten & Kosec correctly claimed that the war in Iraq was not subjected to rigorous cost analysis. Hence, the real economic costs of the war were not being considered. With most cost-of-war analysis focused strictly on budgetary costs, Wallsten & Kosec found a very real deficiency in the literature on the subject. Wallsten & Kosec made the first serious attempt to plug the existing hole in the post-invasion cost of war literature.

By clearly stating the problem, Wallsten & Kosec provided an invaluable service. The Iraq War, which they argue is a controversial and expensive government policy, has escaped detailed analysis. Yet the problem itself is both timely and compelling. Furthermore, ongoing discussion of budgetary costs of the war throughout Congressional debate and popular media suggest that a true grasp of the economic costs of the war are still far from widely understood.<sup>27</sup>

Davis et al.'s study builds upon one they conducted prior to the Iraq war that assesses costs of forcible regime change versus containment, largely from an *ex ante* perspective and seeks to systematically evaluate those two policy options. They clearly state that, despite the 2005 date, they base their analysis on facts available in early 2003. Indeed, a major contribution results from their exploration of the two principal policy options, war or containment.<sup>28</sup>

Bilmes and Stiglitz' study proposes a span of estimates, which identify the Iraq war's actual present and estimated future costs to America, both budgetary and social. They reveal that war cost estimates have varied dramatically, even

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<sup>26</sup> Nordhaus, *The Economic Consequences of a War with Iraq*, 2.

<sup>27</sup> Boston Globe. *Costliness Of The War Is Subject To Debate*. March 17, 2007.

<sup>28</sup> Davis, *War in Iraq Versus Containment*, 6.

when provided by the same government organization. Building from the Congressional Budget Office's estimate of \$500 billion,<sup>29</sup> the authors consider additional costs "such as lifetime healthcare and disability payments to returning veterans, replenishment of military hardware, and increased recruitment costs".<sup>30</sup>

By seeking to provide a more complete account of Iraq war costs, these studies are both timely and useful. As America continues with the Global War on Terrorism, the bill keeps growing, with or without a clear understanding by America's policy makers as to what specifically is driving those costs. As Congress and the President grapple with current strategy, gaining a true appreciation for the cost of our policies is critical, since the decisions we make today will have an impact on American society, our economy, and our warfighting ability for generations to come.

#### **4. Understanding the Theoretical Base**

Nordhaus grounds his study in a review of the costs of previous major conflicts, from the Revolutionary War through the First Gulf War. He then builds several scenarios based on inputs and outputs to provide likely outcomes that provide the boundaries for his analysis. Two conceptual points are spelled out; first, that total economic costs are considered, not just budgetary; and second, that costs are incremental, beyond what would normally have been spent had the war not taken place. This latter point is an important consideration, since including the costs of paying soldiers their normal salaries, a large cost by itself, would have taken place whether or not the war had occurred. Inclusion of such costs in estimates inevitably skews the numbers upward.

According to Wallsten and Kosec, discussion surrounding Iraq war costs finds its genesis in the Persian Gulf War of 1991, after which the United States began enforcing the no-fly zones in northern and southern Iraq to contain

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<sup>29</sup> Bilmes, *The Economic Cost of the Iraq War*, 2.

<sup>30</sup> Ibid., Abstract.

Saddam Hussein's regime. Yet the discussion has largely centered on the budgetary costs of the war, not the actual, direct economic costs. As they define it, budgetary costs comprise those costs found in the governmental expenditures, while the direct, economic costs consist of both "the opportunity cost of resources used in the war that cannot be used elsewhere and the welfare losses of those killed and wounded," in addition to the budgetary costs.<sup>31</sup> These economic costs are specific to the United States, but discussion is also given by the authors to the direct global costs of the war that include these costs to Iraq and other countries.

The literature dealing with the economic costs of the war, as presented in Wallsten and Kosec's literature review, is limited to studies conducted before the beginning of the war. Identification of a gap in the literature since that time has helped Wallsten & Kosec identify the problem considered in this study. The principal arguments of three studies from 2002 and 2003 are presented. Their conclusions provide a range of economic costs, all greatly exceeding budgetary outlays, though one study predicts that the net benefits of the war would exceed the net benefits of a continued containment policy. They make a significant contribution through their presentation of rigorous cost analysis several years into the war. This study established a new benchmark in the cost of war literature.

Davis et al., ground their study in earlier works assessing the economic consequences of the war in Iraq, building on Nordhaus' work and drawing heavily on reports by government agencies, including the CBO, to construct their estimates on war and containment. What makes their study particularly interesting is their consideration of the sustainability and effectiveness of a continued containment policy, along with the effects that war has on potential terrorist attacks on the United States.<sup>32</sup>

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<sup>31</sup> Wallsten, *The Economic Costs of the War in Iraq*, 5.

<sup>32</sup> Davis, *War in Iraq Versus Containment*, 7.

Bilmes and Stiglitz posit that the basic total direct budgetary costs of the war are generally agreed to be about \$251 billion as of December 2005.<sup>33</sup> This estimate only includes money spent by the government to conduct combat operations. Other costs identified that have not been considered by Bilmes and Stiglitz include costs to care for wounded personnel, additional Veterans Administration (VA) benefit costs to support the National Guard (who are not normally supported by the VA), long-term disability pay for veterans, demobilization costs, equipment replacement costs, increased recruiting costs, and the cost of interest payments on war debt. The literature referred to by the authors indicates that additional costs must be included along with direct budgetary costs in any war cost analysis.

## **5. An Overview of the Methodologies**

Nordhaus grounds his economic analysis by applying an *ex ante* CBA methodology to a variety of elements that he's been able to quantify that comprise the total cost of the war in Iraq over a decade-long time frame ranging from 2003-2012. Such a methodology is frequently used prior to a policy decision being made. These costs are only for the United States and range from \$99 billion to \$1,924 billion.<sup>34</sup> Direct military spending is considered, as well as follow-on costs such as occupation and peacekeeping, reconstruction, impact on oil markets, and other macroeconomic impacts.

Wallsten & Kosec also apply a cost-benefit analysis methodology in their approach to understanding the economic costs of the war in Iraq. They do so specifically by employing a type of CBA known as *in media res*, which is conducted during the course of an ongoing policy, namely the war in Iraq. The benefits of this type of analysis, as Anthony Boardman et al. (2006) point out, in contrast to the *ex ante* CBA conducted prior to a policy decision (and used in the earlier studies), is that it allows for the use of observed data on impacts rather

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<sup>33</sup> Bilmes, *The Economic Cost of the Iraq War*, 7.

<sup>34</sup> Nordhaus, *The Economic Consequences of a War with Iraq*, 39.

than predictions, and hence provides more accurate and potentially more useful information than those presented in the pre-war literature.<sup>35</sup> While CBA is recognized as a tool for assisting in resource allocation decisions, it is not without criticism, and the authors are quick to point out that the analysis yields results that are often imprecise and difficult to interpret. They assume that the reader has a basic understanding of CBA in their critique of the methodology, including *a priori* assumptions and how to conduct the analysis. While they do reference a study that discusses the controversy surrounding the use of CBA as well as its benefits, greater discussion would be beneficial.

The authors do a solid job in framing their study for those who possess an understanding of CBA. Leedy and Ormrod explain, “if others know the assumptions a researcher makes, they are better prepared to evaluate the conclusions that result from the assumptions.”<sup>36</sup> These include considering appropriate caveats on the nature of the data and estimates, which they describe as both imprecise and lacking in quality. Furthermore, while acknowledging the uncertain environment within which their estimates are based, their focus is on direct costs while avoiding costs that they are unable to monetize. They conclude that they are unable to delineate whether or not the benefits of the war exceed the costs. The problematic nature of the costs implies that they will be difficult to accurately catalog. As a result, Wallsten & Kosec limit their goal to providing an analytical framework that may prove useful in the policy debate over Iraq, as well as provide a more thorough basis on which to assess the war’s actual economic costs.

Wallsten and Kosec’s work is comprised of an ambitious mix of both quantitative and qualitative data. The costs are allocated among those borne by the United States, Coalition Forces, and the Iraqis respectively. Expected net present values of costs are included as well, expanding on a Congressional

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<sup>35</sup> Boardman, *Cost-Benefit Analysis*.

<sup>36</sup> Paul D Leedy and Jeanne E. Ormrod. *Practical Research. Planning and Design*. 8<sup>th</sup> Edition. (Upper Saddle River, NJ: Pearson Education, Inc., 2005), 57.

Budget Office study that calculates costs out to 2015. Finally, avoided costs are addressed, such as the United States no longer enforcing the no-fly zone (for the U.S.) and people not being murdered by the Hussein regime in Iraq (for Iraqis). They do an admirable job in detailing how their numbers are calculated. A six-page appendix details how various costs were reckoned, such as the Value of Statistical Life (VSL) for the cost of each fatality. These items are rigorously documented, providing a useful key for anyone looking to better understand the rationale for their cost calculations.

Davis et al. (2005) use a variety of historical data to estimate the economic costs of military employment and then apply these estimates to a variety of scenarios for the war in Iraq, yielding estimates ranging from \$410 billion to \$630 billion.<sup>37</sup> These costs are then compared to a counterfactual (a staple of CBA methodology): specifically, what a continuation of the pre-war containment policy would have cost. These estimates include a containment policy range of \$350 billion to \$700 billion.

Bilmes and Stiglitz begin by delineating direct costs and associated direct social costs. It then covers estimates of macroeconomic costs, how the war affects the American economy. Bilmes and Stiglitz employ mostly quantitative methods. By its nature but certainly not always, economic analysis frequently comes to monetary equivalents. Qualitative methods are employed only to justify quantitative cost estimates. When using qualitative methods to establish costs, they carefully explain the difficulty of quantification. For example, the standard VSL is identified as about \$6.1 million. However, Bilmes and Stiglitz quickly point out that juries have awarded wrongful death lawsuits for as much as \$269 million.<sup>38</sup> Clearly, the methods employed by Bilmes and Stiglitz attempt to be quantitative, but they cannot escape qualitative evaluations to support their estimates. This is a common theme throughout the methodological frameworks employed by economists in analyzing costs of war.

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<sup>37</sup> Davis, *War in Iraq Versus Containment*, 1.

<sup>38</sup> Bilmes, *The Economic Cost of the Iraq War*, 15.



## 6. The Results Discussed

Nordhaus (2002) does a good job in presenting the results of his analysis throughout the course of his paper, followed by a rather complex technical appendix that delves much deeper into the economic effects on oil markets, exploring both the real-income effect and the business-cycle impact. His range of potential outcomes demonstrate the complexity involved with predicting costs prior to the war occurring. Nordhaus uses the metaphor of “war as a giant roll of the dice”<sup>39</sup> to characterize the chance involved with low or high estimates proving correct. Somewhat prophetically, his high estimates are based on potential misjudgments during the war, which, four years later, demonstrate how quickly these costs can add up.

A particular strength of the Wallsten and Kosec study is the manner in which the results are clearly stated and understandable. Given the research problem, supporting literature, and methodology, the results presented were well supported. Costs dealing with government expenditures, fatalities, and injuries were particularly well explained. Wallsten and Kosec provide a grounding of direct costs alone exceeding \$1 trillion through 2015.<sup>40</sup> Further explanation would have been appreciated for discussion on avoided and future costs, as well as those borne by Iraqis and coalition partners. Additionally, other costs, such as those borne by employers to temporarily replace deploying reservists in their civilian occupations, were only mentioned, though such costs are highlighted repeatedly in popular media and would seem especially interesting to many readers.

The study sought to lay a framework for estimating the direct and avoided economic costs of the Iraq war for the United States, Iraq, and coalition partners, and in that regard the study was successful. Economic impacts beyond the direct costs addressed in this study serve as the basis for suggestions of future

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<sup>39</sup> Nordhaus, *The Economic Consequences of a War with Iraq*, 40.

<sup>40</sup> Wallsten, *The Economic Costs of the War in Iraq*, 2.

research, including macroeconomic impacts. Based on their assessment in 2005, things appeared to be looking brighter. From the vantage point of 2007, their assessments appear to have been overly optimistic. This does not detract from their study, which provides an ample foundation for future research.

As Davis et al., point out, it is difficult to discern which policy, containment or war, has been more costly to date. The basis for this conclusion depends on questions of who has standing in consideration of costs and benefits, and what costs and benefits are deemed relevant. For instance, the authors broaden the economic cost-benefit calculations by incorporating Iraqi well-being and lives lost. The complexity of this computation is compellingly presented. Davis et al., point out that, despite the complexity in gaining clarity of this issue, the systematic approach to the cost benefit analysis is what is critical, not the specific numbers. As they state, “precisely because the stakes are so high and the decisions are so difficult, it is essential to systematically evaluate alternatives as an input to decision making and the formulation of national security policy.”<sup>41</sup>

Throughout their paper, Bilmes and Stiglitz do an excellent job of pursuing and detailing their primary focus in providing a range of estimates of present and future costs. They list their inclusions and explain their exclusions and limitations. Their work’s summary is purely a qualitative derivation of their analysis, with no narrative summary of the actual results.

Bilmes and Stiglitz do a superb job of fully discussing the issues. They cover both direct and indirect, budgetary and social, past and future cost estimates. They qualify their estimates and provide what they describe as both “conservative” and “moderate” estimate ranges.<sup>42</sup> Their approach allows the reader some choice in accepting the results. In the end, the authors conclude that the war will cost in excess of \$1 trillion, with significant social and economic consequences. For example, the authors identify an expert who “estimates that

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<sup>41</sup> Davis, *War in Iraq Versus Containment*, 63.

<sup>42</sup> Ibid., 6.

the value of the stock market is some \$4 trillion less than would have been predicted on the basis of past performance” because America chose to go to war with Iraq.<sup>43</sup> Another interesting cost is a trade-off in gaining Reserve Forces support in Iraq, but losing “first responder” support at home. The authors cite an Institute for Policy Studies report that claims 44% of American police forces have members deployed to Iraq, an important issue when states that were ravaged by Hurricane Katrina desperately needed first responders.<sup>44</sup>

## **7. Budgetary Cost of Reserve Utilization**

The direct budgetary costs of utilizing U.S. Reserve Forces have also been researched. By considering these costs, we can focus more directly on the social costs of employing the Reserve Forces in the Global War on Terrorism. No matter which costs are specifically included, employing Reserve Forces is clearly expensive. Belasco explains that “in terms of incremental war costs (above peacetime levels), activating reservists is more expensive than using active-duty forces because DoD pays not only special pays for combat but also full-time rather than part-time salaries. For active-duty troops, the only additional war-related costs are special pays.”<sup>45</sup> Wallsten and Kosec argue that the opportunity cost of using the Reserves and National Guard in Iraq is “\$3.9 billion per year, or \$10.3 billion to date.”<sup>46</sup>

## **8. Conclusion**

The economists listed here broke new ground with their CBA studies on the economic costs of the war in Iraq. The implications of their analyses of the economic costs of the war have helped refocus the debate on the Iraqi war costs and have become a benchmark on which other studies now measure themselves

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<sup>43</sup> Davis, *War in Iraq Versus Containment*, 28.

<sup>44</sup> Ibid., 14.

<sup>45</sup> Belasco, *The Cost of Iraq, Afghanistan, and Other Global War on Terror Operations*, 24.

<sup>46</sup> Wallsten, *The Economic Costs of the War in Iraq*, 8.

and build upon. Additionally, the authors of these studies have shown the value of delving boldly into policy areas, which are not clearly defined. Where data is often unavailable, numerous assumptions are necessary, and methodologies must be adapted to study the questions at hand. Ultimately, their greatest contributions are not simply the detailed quantification and descriptive analyses, but rather the heuristic paradigms that they provide in approaching the problem.

Indeed, it is this understanding that answers the “why should I care?” question that all research must present to its readers. This answer is illuminated in the last sentence of Wallsten & Kosec’s study where they state, “hopefully, policy makers and others that have better data than we have can refine our approach and assess whether the benefits justify the costs.”<sup>47</sup> It is in exploring the economic cost-benefit calculus as it addresses the Global War on Terrorism that our Nation’s leaders may derive the greatest benefit on this critically important policy issue. The authors have made a huge contribution by informing this discussion and helping to correctly structure the debate by revealing and exploring the full range of costs impacting the United States and others.

### **C. TOTAL FORCE POLICY**

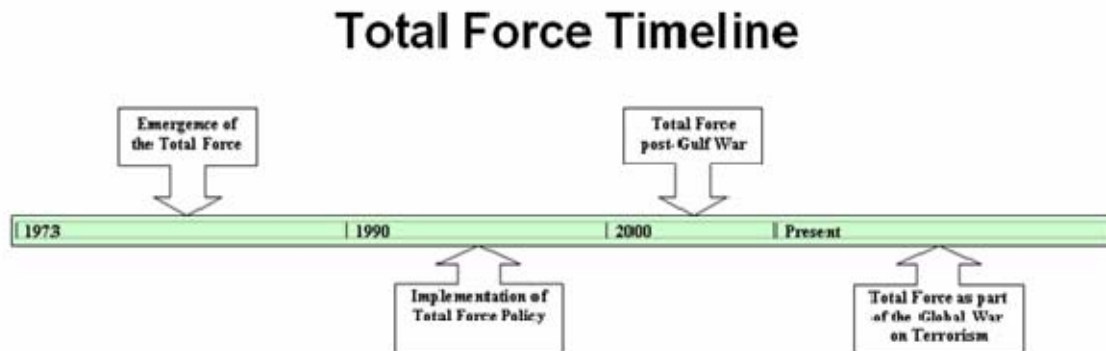
The Total Force Policy serves as the cornerstone of the way United States military forces are structured. A rich body of relevant literature begins with the genesis of the concept in the 1960s during the Vietnam War, follows the implementation of the policy in 1973, and evaluates it in practice over the past 30 years. Controversy over how to staff America’s military is as old as the country, and the current policy is one that is not universally supported. Any understanding of the costs of utilizing Reserve Forces in war must rightfully begin in discussing how the organizing concept of those forces has been created and sustained. To obtain this understanding, Total Force Policy can be organized along four temporal divisions, as outlined in Figure 1: pre-1973 and the emergence of the Total Force; 1973-1990, the implementation of Total Force

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<sup>47</sup> Wallsten, *The Economic Costs of the War in Iraq*, 19.

Policy; 1991-2000; the Total Force following the 1991 Persian Gulf War and the end of the Cold War; and 2001 to date, the Total Force in the Global War on Terrorism.

**Figure 1. Total Force Timeline**



### **1. Pre-1973: The Emergence of the Total Force**

In March 1969, President Richard Nixon appointed an advisory commission on an all-volunteer force (AVF) headed by former Secretary of Defense, Thomas S. Gates, Jr.<sup>48</sup> One of the key charges of the Gates Commission was to analyze the social and economic costs of the AVF. Political forces during the Vietnam War, among other reasons, appear to have necessitated a move from conscription to AVF.<sup>49</sup> A principal outcome of the Commission was based on findings that earlier DoD estimates that the United States could not afford to end the draft were inflated and unsupportable, and that

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<sup>48</sup> For a detailed look at the findings of the Gates Commission, see The President's Commission on an All-Volunteer Armed Force. Studies Prepared for the President's Commission on an All-Volunteer Armed Force. November 1970 (Washington, D.C.: U.S. Government Printing Office, 1971).

<sup>49</sup> Frederick Nolting, Jr. makes this point in the Forward of Keeley's (1978) edited book. "The move from conscription to the all-volunteer system in the United States was basically dictated by political forces arising from the Vietnam War." (vii) This is also pointed out by Robert Fullinwider in the introduction to his edited book where he points out that "resistance to and hostility toward the Vietnam War draft led to the collapse of political support for conscription." (Fullinwider, 1983, 1).

the country would, in fact, reduce economic cost by moving to an all-volunteer force.<sup>50</sup> As a result, the United States ended conscription in 1973 and the Total Force Policy was born, a structure created that was based on the concept of an all-volunteer force split between active and reserve components. Bernard Rostker provides a comprehensive history of how the Total Force Policy has evolved over the past 40 years in his 2006 work, “I Want You! The Evolution of the All-Volunteer Force.”<sup>51</sup>

## **2. 1973–1990: Implementation of Total Force Policy**

A number of studies have addressed Total Force Policy since the creation of the All-Volunteer Force in 1973. John Keeley’s edited volume, “The All-Volunteer Force and American Society,” was one of the first to assess the AVF system five years after its creation. As Keeley points out, “complex interrelationships (exist) between our society and its military forces,” a relationship further characterized as “close, vital, and truly organic.”<sup>52</sup> The collection of six essays that comprise this book address what were perceived as serious problems “concerning (the AVF’s) present vitality and its future viability.”<sup>53</sup> One of the key problems noted was “questionable strategic premises, especially regarding the role of reserve forces.”<sup>54</sup> These questions demonstrated the ongoing controversy in the 1970s surrounding the implementation of the AVF, noting that the structure of the military forces was central to future warfighting readiness. As Keeley points out, “the viability of strategic assumptions for the

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<sup>50</sup> Walter Y. Oi and Brian E. Forst, “Manpower and Budgetary Implications of Ending Conscription,” in The President’s Commission on an All-Volunteer Armed Force. *Studies Prepared for the President’s Commission on an All-Volunteer Armed Force. November 1970* (Washington, D.C.: U.S. Government Printing Office, 1971), I-1-2.

<sup>51</sup> Bernard Rostker. *I Want You! The Evolution of the All-Volunteer Force* (Santa Monica, CA: RAND Corporation, 2006). Rostker’s work is singularly perhaps the most comprehensive view of the history behind Total Force Policy and the All-Volunteer Force up to the Global War on Terrorism.

<sup>52</sup> John B. Keeley. *The All-Volunteer Force and American Society* (Charlottesville, VA: The University Press of Virginia, 1978), xi.

<sup>53</sup> Ibid.

<sup>54</sup> Ibid., xii.

employment of the nation's military forces can only be assessed against the condition of both the active and the reserve forces.”<sup>55</sup>

We use the term Reserve Forces to mean the Army National Guard, Air National Guard, Air Force Reserve, Naval Reserve, Marine Corps Reserve, Coast Guard Reserve, and Individual Ready Reserve. As Keeley points out, “the distinction between and among the classes of reserves and types of reserve forces is almost Byzantine in its complexity.”<sup>56</sup> As in his study, detailed distinctions between what we label collectively as Reserve Forces are beyond the scope of our study, and are viewed in general contrast to Active Duty Forces, another collective term for the current form of all the military services. However, all of these forces are founded in the National Defense Act of 1916, which not only established several of these federal reserve forces, such as the Navy and Marine Corps Reserve, but transformed the relationship with the National Guard as well.<sup>57</sup> As John Refuse notes, the distinction between National Guard and Reserve was blurred during World War I with their participation in federal service, and the National Guard was drawn even more closely in as a reserve component following the 1933 Amendment to the 1916 National Defense Act.<sup>58</sup> Our collective definition also finds reference in federal statute. Charles Heller defines the reserve components of the Armed Forces based upon the Title 10 United States Code, which provides the legislative basis for the Reserves. This is specifically the Army National Guard, the Army Reserve, Naval Reserve, Marine Corps Reserve, Air National Guard, Air Force Reserve, and Coast Guard

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<sup>55</sup> Keeley. *The All-Volunteer Force and American* 166.

<sup>56</sup> In John B. Keeley's essay “United States Reserve Forces: A High-Cost, Low-Return Investment in National Security.” In John B. Keeley. *The All-Volunteer Force and American Society* (Charlottesville, VA: The University Press of Virginia, 1978), 166.

<sup>57</sup> See Herman Boland's historical survey of U.S. Reserve Forces policy in “The Reserves” in The President's Commission on an All-Volunteer Armed Force. *Studies Prepared for the President's Commission on an All-Volunteer Armed Force. November 1970* (Washington, D.C.: U.S. Government Printing Office, 1971), IV-2-5.

<sup>58</sup> John L. Rafuse, “United States' Experience with Volunteer and Conscript Forces,” in The President's Commission on an All-Volunteer Armed Force. *Studies Prepared for the President's Commission on an All-Volunteer Armed Force. November 1970* (Washington, D.C.: U.S. Government Printing Office, 1971), III-1-25.

Reserve. More so, he defines the categories that comprise the Reserve forces: the Ready Reserve (Selected Reserve, Individual Mobilization Augmentees, and Individual Ready Reserve); the Standby Reserve; and the Retired Reserve.<sup>59</sup> While these distinctions are an important facet of Total Force Policy, most of the literature addresses the Reserves and National Guard collectively or else specifically delineates which aspect of the AVF to which they are referring.

Perhaps one of the most interesting and enduring issues raised by Keeley is that the AVF debate was largely framed by economists, and policy decisions were largely evaluated using economic considerations (where cost effectiveness is seen as a “lodestone of military management”<sup>60</sup>). As Keeley points out, “the success or failure of our military forces is ultimately defined in the crucible of war.”<sup>61</sup> While Keeley’s point is well taken, we cannot escape the obligation to provide some rigor to our policy discussions that are generally compared using some form of cost effectiveness analysis.

The economic underpinnings of the AVF decision are evident in much of the literature. For example, Gwyn Harries-Jenkins, in his discussion of the British experience with the AVF, points out that many studies have looked at the economic consequences of conscription and generally concluded that it “is a tax which is exacted and paid in unremunerated labor.”<sup>62</sup> Summarizing Paul Cockle’s views, “the cost to society of conscription is the foregone output. An artificially low wage results in an inefficient allocation of resources between military and civilian communities and far from being cheap is quite expensive.”<sup>63</sup> Furthermore, Harries-Jenkins states that “...the exercise of economic

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<sup>59</sup> Charles E. Heller. *Total Force: Federal Reserves and State National Guards* (Carlisle Barracks, PA: U.S. Army War College, 1994). 8.

<sup>60</sup> Keeley, *The All-Volunteer Force and American Society*, xii.

<sup>61</sup> Ibid.

<sup>62</sup> Keeley, *The All-Volunteer Force and American Society*, 103.

<sup>63</sup> Paul Cockle. “Military and Civil Relations: The Economic Nexus.” Quoted by Gwyn Harries-Jenkins in her article “The British Experience with the All-Volunteer Force” in Keeley (1978). (104) Another study noted by the author is W. Y. Oi’s “The Economic Cost of the Draft” *American Economic Review*, May 1967.



rationality...has continued to be determined by budgetary and not economic cost consideration” and as such, “an awareness of the social costs...is one factor which may inhibit the exercise of a rational preference.”<sup>64</sup>

Another study providing one of the most careful economic treatments of the cost and benefits of the AVF is John Warner and Beth Asch’s “The Record and Prospects of the All-Volunteer Military in the United States.”<sup>65</sup> They discuss efficiency and equity issues in the choice between a draft force, comprised of a mix between volunteers and draftees, and an all-volunteer force, and conclude that “the economic case for continuing the AVF is more compelling today than in the 1970s.”<sup>66</sup> The authors base this not only on reduced manpower needs, on the whole, demanded from society, while necessitating a better-educated, higher quality pool of incoming personnel, but also because “conscription would entail higher social costs because of the greater opportunity costs of the draftees.”<sup>67</sup>

Robert Fullinwider continued the AVF debate in his edited volume “Conscripts and Volunteers: Military Requirements, Social Justice, and the All-Volunteer Force”. The 14 essays within the book take a critical look at the state of the AVF 10 years after its creation, including AVF cost debates. One such study by David Segal mentions that in 1983, DoD estimates showed a slight savings by returning to the draft. However, he was quick to point out that economic studies have shown that economic costs of the draft are far greater than those under the AVF, even if budgetary costs have the opposite relation. As Segal states, “the differential is reflected in such factors as the “conscription tax” borne by those drafted, the productive activities forgone by the individuals assigned to military service, and the inefficient allocation of resources under a

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<sup>64</sup> Keeley, *The All-Volunteer Force and American Society*, 105.

<sup>65</sup> John T. Warner and Beth J. Asch. “The Record and Prospects of the All-Volunteer Military in the United States.” *The Journal of Economic Perspectives*, Vol.15, No.2 (Spring 2001).

<sup>66</sup> *Ibid.*, 190.

<sup>67</sup> Warner and Asch, *The Record and Prospects of the All-Volunteer Military in the United States*, 189.

distorted incentive system.”<sup>68</sup> The discussion of the relevance of budgetary versus economic estimates is an underlying theme threaded through the entire AVF discussion over the past 40 years.

In addition to the cost dimension, implementation of the AVF during this time centered on the purpose and role of the Reserve Forces. From what was initially termed a hollow force in the 1970s and early 1980s developed into one where, as Richard Hunter points out, “the purpose of the reserves is to provide trained people and operational equipment to augment the active forces in time of war.... (These units) are essential to the operational effectiveness of the active forces.”<sup>69</sup> This can be quite clearly exemplified in the Army’s policy development of what it termed Roundout brigades; “reserve component units designated to raise understructured Active Component Divisions to standard mobilization deployment configurations.”<sup>70</sup> Its genesis flowed in the Army’s desire to raise the number of total active divisions without a change in active duty personnel, providing one reserve brigade for every two active duty brigades to form a division, thereby relying on reserve units to supplement or roundout the understaffed active units. The rationale for doing so is based on many factors, including a perceived cost savings of using the reserve, increased deterrence by allowing an increase in active duty divisions, enhance training opportunities for the reserve units, and enhancing the need for popular support of a major conflict by requiring a reserve mobilization to prosecute the conflict.<sup>71</sup> The evolution of policy from a strategic reserve to an operational force had already begun by the late 1980s, when President George H. W. Bush in 1989 stated that the National

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<sup>68</sup> David R. Segal. “Military Organization and Personnel Accession: What Changed with the AVF...and What Didn’t” in Robert K. Fullinwider’s *Conscripts and Volunteers: Military Requirements, Social Justice, and the All-Volunteer Force* (Totowa, NJ: Rowman and Allanheld, 1983), 16.

<sup>69</sup> Richard W. Hunter. “An Analysis of the All-Volunteer Armed Forces” in Robert K. Fullinwider’s *Conscripts and Volunteers: Military Requirements, Social Justice, and the All-Volunteer Force* (Totowa, NJ: Rowman and Allanheld, 1983), 24.

<sup>70</sup> Congressional Research Service Report for Congress. *The Army’s Roundout Concept After the Persian Gulf War* of 22 October 1991, 1.

<sup>71</sup> *Ibid.*, 6.

Guard and Reserves would be manned, trained, and equipped “not on the basis of their peacetime status as forces ‘in reserve’, but on the basis of their direct and complete integration into the operational plans and missions of the nation.”<sup>72</sup>

### **3. 1991-2000: The Total Force following the 1991 Persian Gulf War and the end of the Cold War**

The 1991 Persian Gulf War, also known as Operation Desert Shield/Desert Storm, provided the first real test of Total Force Policy since its inception 17 years earlier. As Charles Heller notes, “Operation Desert Shield/Desert Storm validated the use of the Reserve Components for contingency operations.”<sup>73</sup> Indeed, Heller’s Army War College study “Total Force: Federal Reserves and State National Guards” is an excellent source of information on the various Reserve Components, including background information, structure, and training, and outlines the growing trend toward increased Reserve Force utilization during the early 1990s. This is largely attributed to the “peace dividend” following the Cold War where declining defense budgets led to a smaller Active Duty Force, with associated placement of more combat support elements into the Reserve Forces.<sup>74</sup>

Dallas Owens’ study on the integration of Active-Duty Forces and Reserve Forces notes that a great effort was made following the 1991 Persian Gulf War to integrate active and reserve components (AC/RC), including “increased frequency of inter-component training, the integrations of reserve components into plans and operations for all contingencies, and RC participation in routine shaping operations.”<sup>75</sup> This came as a result of modifying the Total Force Policy

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<sup>72</sup> FY1988 Reserve Forces Policy Board Report dated 22 February 1989 in U.S. Army Combined Arms and Services Staff School. *Reserve Component/Mobilization*. Fort Leavenworth, KS. 1991. L1-1.

<sup>73</sup> Charles E. Heller. *Total Force: Federal Reserves and State National Guards* (Carlisle Barracks, PA: U.S. Army War College, 1994), v.

<sup>74</sup> Heller, *Total Force*, v.

<sup>75</sup> Dallas D. Owens, Jr. *AC/RC Integration: Today’s Success and Transformation’s Challenge* (Carlisle Barracks, PA: U.S. Army War College, Strategic Studies Institute, 2001), iii.

originally designed for Cold War requirements to meet emergent “challenges posed by a smaller military, more diverse missions, and more frequent deployments.”<sup>76</sup> Owens further discussed controversy over the definition of integration; specifically, whether it meant interchangeable AC/RC use or specialization in the RC which leads to an “effective combining of components” in their employment.<sup>77</sup>

David Grissmer et al., noted a similar effect of the integration of Reserve and Active-Duty Forces. “Operation Desert Storm provided an important reminder that the Total Force Policy instituted at the end of the draft relies heavily on reserve forces,” a trend likely to increase due to downsizing and restructuring of the armed forces.<sup>78</sup> As Grissmer et al., point out, trade-offs between reserve force readiness and active-reserve force size should be examined closely. It is possible that “larger reserve forces may lower the average readiness of all units and, on net, lower defense capability. “ This is due to “a trade-off between adding additional reserve units and the readiness of remaining reserve units.”<sup>79</sup> More is not necessarily better, though the implication of such a transformation in an environment short of major war raises not only readiness questions but important cost questions as well. This was seen in the operational readiness limitations of the Roundout Brigades mobilized for the Persian Gulf War who were not able to deploy immediately along with their Active Duty counterparts. This issue was fixed after the 1991 war by not incorporating Roundout Brigades into any rapid deployment plans, instead assigning them to supporting roles in units that had a less ambitious timetable.<sup>80</sup>

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<sup>76</sup> Dallas D. Owens, Jr. *AC/RC Integration: Today's Success and Transformation's Challenge* (Carlisle Barracks, PA: U.S. Army War College, Strategic Studies Institute, 2001), vii.

<sup>77</sup> *Ibid.*, 40.

<sup>78</sup> David Grissmer et al. *Prior Service Personnel: A Potential Constraint on Increasing Reliance on Reserve Forces* (Santa Monica, CA: RAND National Defense Research Institute, 1994), xv. The authors point out that during Operation Desert Storm, over 245,000 reservists were activated.

<sup>79</sup> Grissmer, *Prior Service Personnel*, 72.

<sup>80</sup> Congressional Research Service, *The Army's Roundout Concept*, 27.

In a similar manner, Thie and Rostker highlight the controversy surrounding when to use Reserve Forces, specifically delineating questions about activation for contingencies because they are part of the total force versus activation based on a clear need for their participation.<sup>81</sup> Indeed, Thie and Rostker suggest that there may be a move toward greater separation “by role, mission, and function” rather than integration, as some have argued.<sup>82</sup> Despite conflicting arguments, greater separation appeared unlikely. The trend to increase Reserve Forces utilization that began in the early 1990s showed clear parallels to the shift from conscription to the AVF that occurred 20 years earlier, as well as the declining trend in overall Total Force structure end strength, as depicted in Figure 2. As Grissmer et al., state, “the downsizing and restructuring of active forces is an historic shift toward reserve force dependence similar to the transition to an all-volunteer force.”<sup>83</sup> As such, the dependence on Reserve Forces suggests important implications to the policy decisions that would be made after 2001 as the country entered into the Global War on Terrorism.

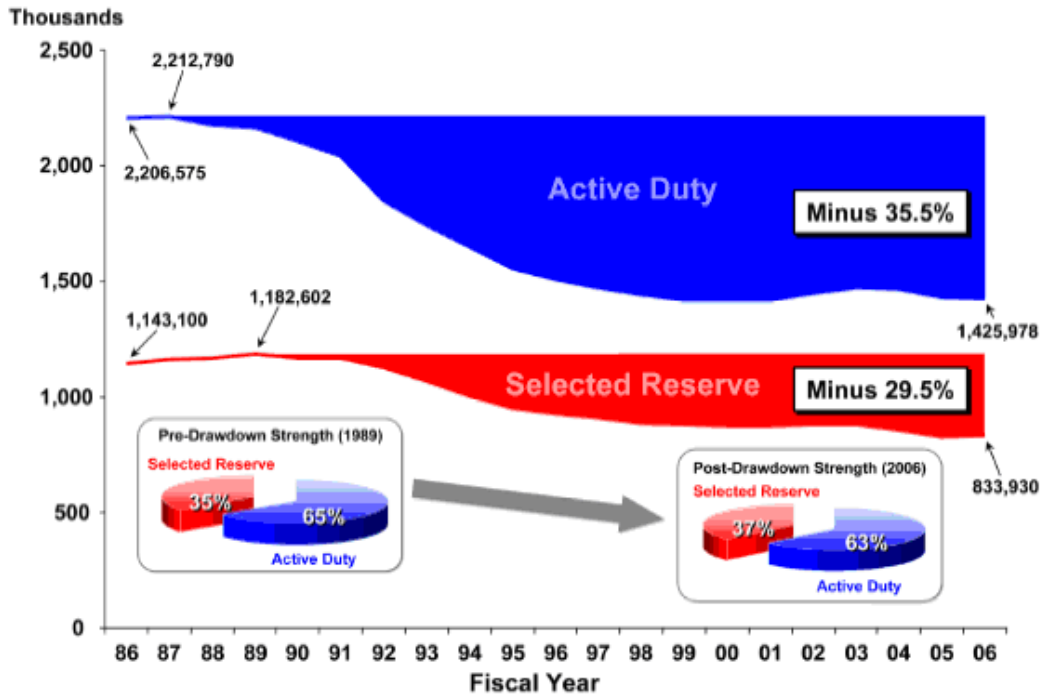
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<sup>81</sup> Harry J. Thie and Bernard D. Rostker. “Structure and Readiness of Future Active and Reserve Forces” in J. Eric Fredland, Curtis Gilroy, Roger D. Little, and W. S. Sellman. *Professionals on the Front Line: Two Decades of the All-Volunteer Force* (Washington, D.C.: Brassey's, Inc., 1996), 168.

<sup>82</sup> Ibid., 169.

<sup>83</sup> Grissmer, *Prior Service Personnel*, xviii.

**Figure 2. Total Force Structure End-Strength Trend<sup>84</sup>**



Source: Briefings prepared by the Office of the Assistant Secretary of Defense for Reserve Affairs (OASD-RA), March 13, 2006; January 2007, slide 8.

#### 4. Post-2001: The Total Force in the Global War on Terrorism

The Bush Administration's assumption of office in 2001, the Quadrennial Defense Review of that year, and the genesis of the GWOT following the events on 9/11, all formed a watershed for Reserve Forces. Even before 9/11 occurred, multiple RAND white papers in Thie et al.'s detailed "Past and Future: Insights for Reserve Component Use," describe how both the 2001 Quadrennial Defense Review and DoD had requested reviews of how the Reserves would be used for such activities as homeland defense and major combat operations.<sup>85</sup> The QDR raised issues about readiness of Reserve Forces, endangered because of

<sup>84</sup> Commission on the National Guard and Reserves. Second Report to Congress. 1 March 2007. 11. The end strength represent the actual manpower strength of Active Duty and Reserve Forces from FY1986 through FY2006.

<sup>85</sup> Thie et al. *Past and Future: Insights for Reserve Component Use* (Santa Monica, CA: RAND National Defense Research Institute, 2004), iii. This study also includes a comprehensive review of past research conducted by RAND on Reserve Components.

downsizing and budget cuts during the 1990s. At the same time increased operational tempo translated into a greater use of Reserve Forces (from 1.4 million duty days in FY89 to 13 million duty days in FY01).<sup>86</sup> Within Thie et al.'s report, Ron Sortor addressed key considerations for the use of Reserve Forces in contingency operations and found they basically fell into three categories: skills, short-term costs and benefits, and long-term costs and benefits. Skills refer to availability and capability within the Reserves. Short-term costs include direct dollar costs, readiness, recruiting, and retention, and absence for homeland defense. Long-term costs include those from the short-term, in addition to questions on proper resource allocation and employer support. As he points out, there appears to be few (if any) studies addressing these concerns in any comprehensive manner.<sup>87</sup> Sortor notes that despite the great use of Reserve Forces during the 1990s, "what has not occurred has been the follow-up, data collection, and analysis required to evaluate systematically the resulting costs and benefits and to provide the empirical basis for policymaking for future (contingency operations)."<sup>88</sup>

In a 2007 follow-up study, Thie et al., note that the roles of the Reserve Forces of today are different from the original intentions. "The reserve components are no longer a force held in strategic reserve. Instead they are selectively and operationally engaged to prosecute missions as well as augment and reinforce the active component. The shift in Reserve Component force structure between the Cold War and Post-Cold War/GWOT phases is clearly

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<sup>86</sup> Thie et al. *Past and Future: Insights for Reserve Component Use* (Santa Monica, CA: RAND National Defense Research Institute, 2004), iii. This study also includes a comprehensive review of past research conducted by RAND on Reserve Components., 1.

<sup>87</sup> Ron Sortor. "RAND White Paper No. 4: Potential RC Contributions to Smaller-Scale Contingencies," in Thie et al. *Past and Future: Insights for Reserve Component Use* (Santa Monica, CA: RAND National Defense Research Institute, 2004), 44.

<sup>88</sup> *Ibid.*, 45.

depicted in Figure 3. The total capabilities of the force, active and reserve, are needed to support the operations of the Department of Defense.”<sup>89</sup>

**Figure 3. Reserve Component Force Structure<sup>90</sup>**

	Cold War	Post–Cold War/GWOT
Army Guard 475K to 350K (+ 8.2K by FY 13)	10 Divisions, 24 Separate Brigades, & Combat Support (CS)/Combat Service Support (CSS)	8 Divisions, 15 “Enhanced” Separate Brigades...to Division HQs with 28 Modular Brigade Combat Teams
Army Reserve 319K to 205K (+1K by FY 13)	Combat, CS & CSS	CS & CSS... Developing Expeditionary Force Packages
Naval Reserve 152K to 70K	Combat & Combat Support plus Active Unit Augmentation	Surge Ready Maritime Total Force, Stand-alone Combat Support, and Augmentation to Combat Units
USMCR 43.6K to 39.6	Mirror image active component, 1 Division, 1 Marine Logistics Group, and 1 Marine Air Wing	Continues to augment and reinforce USMC
Air Guard 116K to 107K	12.5 Fighter Wing Equivalent (FWE), Tactical Lift	7 FWE, Bombers, Continental Air Defense, Future Total Force, Unmanned Aerial Vehicles, Information Operations, More Associate Units
Air Reserve 83K to 74K	Strategic (STRAT) Lift, & Tankers CSS	STRAT Lift, Tankers & CSS More Associate Units, future Total Force
Coast Guard Reserve 12K to 10K	Port Security Units; Marine Safety Units; Command, Control, and Communications; Ops Shore Facilities; Vessel & Air Station Augmentation	Active Coast Guard Unit Augmentation (by individual), Port Security Units (CS)

*Source:* Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/RA) Briefing, slide 16, dated January 24, 2007 ([www.dod.mil/ra/documents/RA%20101%20FY%2006.ppt](http://www.dod.mil/ra/documents/RA%20101%20FY%2006.ppt)).

Bicksler et al., take the most detailed view of the role of the Reserves in the post-9/11 world. Within their edited book, “The All-Volunteer Force: Thirty Years of Service,” William Navas points out that “(DoD) cannot expect (Reserve Forces) to indefinitely sustain the level of effort that they are now being asked to put forth.”<sup>91</sup> As Stephen Herbits states “The future of (the AVF) will be

<sup>89</sup> Thie et al. *Factors to Consider in Blending Active and Reserve Manpower Within Military Units* (Santa Monica, CA: RAND National Defense Research Institute, 2007), 1.

<sup>90</sup> Commission on the National Guard and Reserves. Second Report to Congress. 1 March 2007, 12.

<sup>91</sup> Ibid., 168.



determined by how (DoD leadership) handles the National Guard and reserves over the next several years...by how the total force is adjusted so that members of the guard and reserve are not overused, disrupting their lives and particularly their roles as first responders.”<sup>92</sup> James Helmly agrees with this point, noting that a failure to properly address this issue will “force our nation to return to the debate over conscription versus a volunteer force.”<sup>93</sup> Helmly further notes, “whether we fail or succeed in this global war on terrorism will be directly linked to how we sustain the all-volunteer force.”<sup>94</sup>

The literature shows that today’s Reserve Forces are no longer a strategic reserve but have become an operational force. This is evidenced by the dramatic change in duty days and other statistics. In 1989, the Reserve Forces contributed 1.4 million duty-days, reaching a steady state during the late 1990s of nearly 13 million duty-days annually, and reaching over 60 million duty-days in 2003. Its 1.2 million personnel represent roughly half of the total force.<sup>95</sup> As Robert Steel points out, prior to 1991, few reservists were mobilized. Yet the 1991 Persian Gulf War and subsequent call-ups throughout the 1990s, culminated in a spike in reserve utilization following 9/11, <sup>96</sup> as clearly seen in Figure 4.

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<sup>92</sup> Bicksler et al. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey’s, Inc., 2004), 14.

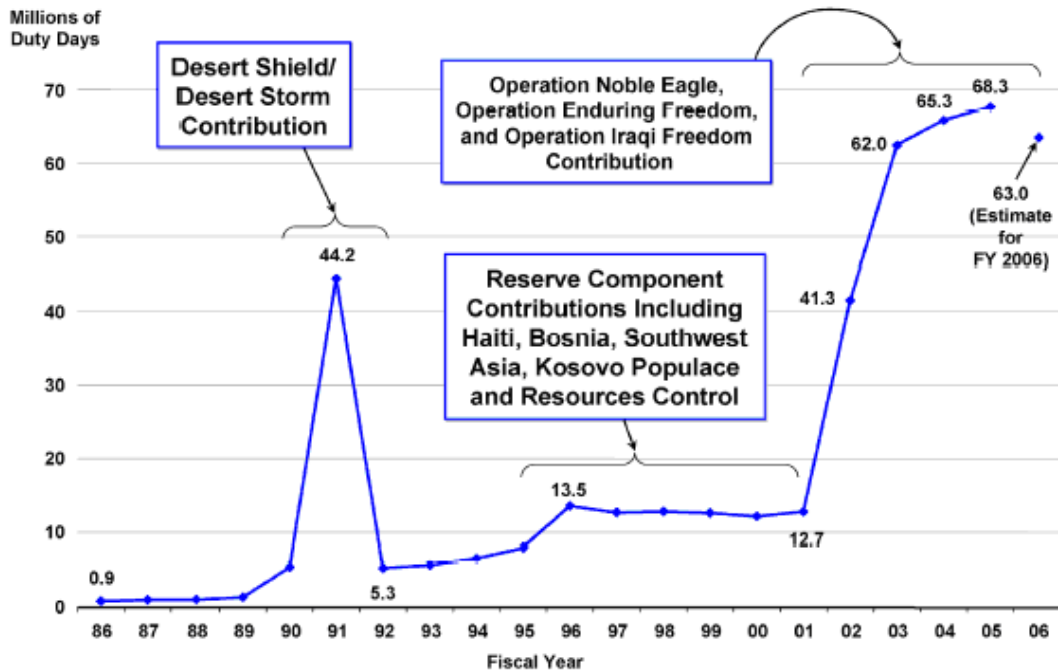
<sup>93</sup> James Helmly. “Manning the Force While at War: A Critical Challenge.” In Bicksler et al. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey’s, Inc., 2004), 201.

<sup>94</sup> Ibid., 205.

<sup>95</sup> Edward Schrock. “From the Home Front to the Front Lines: U.S. Reserve Forces Answer the Call to Duty.” In Bicksler, Barbara A., Curtis L. Gilroy, and John T. Warner. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey’s, Inc., 2004), 191.

<sup>96</sup> “The All-Volunteer Force: An Employer’s Perspective.” In Bicksler et al. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey’s, Inc., 2004), 171.

**Figure 4. DoD Reserve Contributions in Both Peacetime and Contingency Operations<sup>97</sup>**



Source: Briefing prepared for the Secretary of Defense (SecDef) by the OASD-RA, January 2007, slide 3.

The operational utilization of large numbers of Reserve Forces have not been without costs. As Edward Schrock notes, the optempo over several years prior to the Iraq War in 2003, in conjunction with inadequately identified requirements for Reserve Forces in operational plans, led to modified mobilization process, necessitating 264 separate mobilization orders to activate 280,000 Reserve Forces, in contrast to 10 issued for 200,000 during the 1991 Persian Gulf War, highlighting the lack of integration within the Total Force.<sup>98</sup> Additionally, Schrock notes that the Reserve Force was not equipped to the same level as the Active Component, including protective equipment.<sup>99</sup>

<sup>97</sup> Commission on the National Guard and Reserves. Second Report to Congress. 1 March 2007, 18.

<sup>98</sup> Ibid., 195.

<sup>99</sup> Ibid., 197.

If we conclude that we go to war with the force we have, not the force we want, as Former Defense Secretary Donald Rumsfeld stated,<sup>100</sup> cracks within the Total Force Policy were certain to be exposed and magnified over several years of sustained major combat operations. As Michael Dominguez notes, the GWOT is a war “unlike any other our nation has fought and, importantly, is unlike the conflicts for which our reserve component policies, authorities, and organizations were designed.”<sup>101</sup>

#### **D. COSTS OF UTILIZING THE RESERVES**

“What has the All-Volunteer Force cost as compared to previous methods of building the U.S. Armed Forces?”<sup>102</sup> This question was asked in the Comptroller General’s Report to the Congress in February 1978. The question is equally applicable today in a modified form when we look at the costs of reserve utilization, a portion of AVF utilization, in the current Global War on Terrorism. Just as the Gates Commission found that “the cost of an all-volunteer force is unquestionably less than the cost of a draft force when the hidden costs of conscription are fully recognized,”<sup>103</sup> so to do we hypothesize based on a similar relationship that the economic costs to society of reserve utilization in an operational force capacity are unquestionably more in terms of resources than maintaining them as a strategic reserve and increasing the size of the active duty force.

For the purposes of our study, we define the economic cost of reserve utilization as the value of reserve personnel employed by DoD as an operational force that is not available for use in other parts of American society as they would

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<sup>100</sup> This comment was made by the Secretary of Defense at a town hall meeting with soldiers at Camp Buehring, Kuwait on December 8, 2004. From William Kristol’s Washington Post article entitled “The Defense Secretary We Have” on December 15, 2004.

<sup>101</sup> Bicksler, *The All-Volunteer Force*, 322.

<sup>102</sup> Comptroller General’s Report to the Congress. *Additional Cost of the All-Volunteer Force* (Washington, D.C.: U.S. General Accounting Office, 1978).

<sup>103</sup> *Ibid.*, 57.

have been when employed as a strategic reserve. More specifically, economic cost is comprised of the social cost to the civilian economy, which comprises the value of certain goods and services that could have been produced by Reserve Forces had they been employed in the civilian economy.<sup>104</sup> Furthermore, it should be noted that as we consider Reserve Forces in total within our study, American society similarly serves as our unit of analysis, inspired by Walter Oi and Brian Forst's statement that "the burden of defense properly belongs to all citizens."<sup>105</sup>

Originally, government estimators, such as the GAO, dealt with the cost issue of the AVF by looking solely at the budgetary costs, and although criticized for not considering future financial costs, believed that their approach represented a reasonable assessment of costs and that the unavailability of data, along with the imprecision of future cost estimates, precluded attempts at measuring future costs with any degree of accuracy.<sup>106</sup> They also did not include social costs that had been originally considered by the Gates Commission. While these are precisely the costs that are most interesting and most relevant to senior decision makers in the Administration,<sup>107</sup> they are often the least understood and do not coincide clearly with normal government budgetary decision making.<sup>108</sup>

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<sup>104</sup> This definition is inspired by the definition of economic cost presented in the Comptroller General's Report to the Congress. *Additional Cost of the All-Volunteer Force* (Washington, D.C.: U.S. General Accounting Office, 1978), 51.

<sup>105</sup> Walter Y. Oi and Brian E. Forst, "Manpower and Budgetary Implications of Ending Conscription," in The President's Commission on an All-Volunteer Armed Force. *Studies Prepared for the President's Commission on an All-Volunteer Armed Force. November 1970* (Washington, D.C.: U.S. Government Printing Office, 1971), I-1-63.

<sup>106</sup> Comptroller General's Report to the Congress. *Additional Cost of the All-Volunteer Force* (Washington, D.C.: U.S. General Accounting Office, 1978), ii.

<sup>107</sup> Within the Comptroller General's Report, we concur with the statement that "according to RAND, the most appropriate measure of cost for policy decision purposes is economic costs." From Comptroller General's Report to the Congress. *Additional Cost of the All-Volunteer Force* (Washington, D.C.: U.S. General Accounting Office, 1978), 71.

<sup>108</sup> For a prime example of the difficulty in understanding economic versus budgetary costs at the senior policy making level, see testimony before the Senate's Subcommittee on Manpower and Personnel found in Committee on Armed Services. *Costs of the All-Volunteer Force* (Washington, D.C.: U.S. Government Printing Office, 1978), 11-13.

Cost studies of the AVF have shown mainly a bifurcation in cost thinking, considering it either in terms of budgetary cost (the cost to the taxpayer) or economic cost (the cost to society). As such, a wide range of estimates have been created based on the assumptions underlying the variables considered in determining the specific definition of cost.<sup>109</sup> Interestingly, as John Schank points out, it was not until FY83 and the creation of the Office of the Assistant Secretary of Defense for Reserve Affairs that a study assessing the Reserve Forces of all three primary military branches was undertaken<sup>110</sup>, though this study only considered costs and not combat capability. Schank recognizes this deficiency when he states “cost is only one input in policy decisions; capability must also be considered.... Although not an easy task, the relationships between costs and capabilities must be understood and considered in any policy decision involving change in the force structure.”<sup>111</sup>

A follow-on cost analysis study of Reserve Force change by Schank et al., pointed out that many studies have been done on the cost issues of Reserve units, though most of these studies only address annual recurring costs of Active and Reserve units. Their study addresses primary and secondary costs associated with changes in force structure. As they state, “to completely understand the economic consequences of policy decisions affecting the force structure and composition, all significant cost effects must be addressed.”<sup>112</sup> While their study focused principally on Navy and Air Force Reserve forces, their conclusions seem applicable to the wider Reserve force. For instance, as they point out, their study suggests, “the non-recurring costs associated with unit changes are highly dependent on the specific type of change and the

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<sup>109</sup> Comptroller General's Report to the Congress. *Additional Cost of the All-Volunteer Force* (Washington, D.C.: U.S. General Accounting Office, 1978), 50.

<sup>110</sup> John F. Schank. *Reserve Force Cost Research* (Santa Monica, CA: The RAND Corporation, 1986), 12.

<sup>111</sup> Ibid.

<sup>112</sup> Schank et al. *Cost Analysis of Reserve Force Change: Non-Recurring Costs and Secondary Cost Effects* (Santa Monica, CA: RAND National Defense Research Institute, 1987), v.

characteristics surrounding the change. As such, general cost estimating relationships are difficult to develop....”<sup>113</sup> However, they also note that “force-wide cost models can facilitate the analysis of force changes by addressing the interactions of force units that are difficult to quantify with the conventional individual unit cost models” and they specifically recommended the creation of such models to address the secondary or force-wide effects and to help in the economic analysis of policy decisions.<sup>114</sup> As Boland points out in the context of strategic planning, the primary question should be one that addresses “the appropriate relationship between active and reserve forces in a well balanced total structure”.<sup>115</sup> This is a further reason why our study considers the Reserve Force as a whole.

During the President’s Commission on an All-Volunteer Armed Force, Boland (1970) created a conceptual framework that addresses the structural differences between active and reserve forces in which reserves are generally part-time, manned at lower levels, and attached to geographical and occupational roots in the civilian community. This classification scheme still informs the debate today. As originally conceived, Reserve Forces generally have two primary cost-effectiveness considerations. First, they generally cost less. Second, they are generally less capable.<sup>116</sup> While there are certainly exceptions to each of these considerations within and among various Reserve Forces and particular types of units, Boland’s implication is that options should include a range of force mixes, not simply an either/or choice. The problem, he

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<sup>113</sup> Schank, *Cost Analysis of Reserve Force Change*, vii.

<sup>114</sup> Ibid., ix.

<sup>115</sup> Herman Boland. “The Reserves” in The President’s Commission on an All-Volunteer Armed Force. *Studies Prepared for the President’s Commission on an All-Volunteer Armed Force*. November 1970 (Washington, D.C.: U.S. Government Printing Office, 1971), IV-2-32.

<sup>116</sup> Ibid.

points out, is “to determine an optimum allocation among these components to meet specified contingencies when the relative costs are known and the resource level is set.”<sup>117</sup>

Senator Edward Brooke captured the trade-off between cost and risk of the AVF readiness when dealing with force structure that Boland’s framework illuminates. As he states, “the United States cannot afford to maintain a military structure capable of meeting every conceivable threat or contingency. The high cost of active duty forces compels the United States to limit attention to the most evident needs while maintaining a lower-cost standby surge capacity as insurance... the reserve forces would have to supply the immediate surge capacity which the standing active duty forces must necessarily lack because of cost considerations.”<sup>118</sup>

One of the key factors surrounding the cost of Reserve Force utilization has been economic losses suffered by Reservists when mobilized, especially for extended periods of time. Grissmer et al., note the heavy role played by approximately 250,000 Reserve Forces during Operation Desert Shield/Desert Storm, especially in serving critical combat support/service support functions. But many suffered economic losses during mobilization resulting from the difference in incomes (including benefits), and additional expenses incurred because of a call to active duty. As such, these losses can affect recruiting, retention, and readiness, and impose hardships on reserve families.<sup>119</sup> The losses were particularly substantial for individuals with high incomes or who were self employed. 55 percent of officers and 45 percent of enlisted personnel

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<sup>117</sup> The President’s Commission on an All-Volunteer Armed Force, IV-2-33.

<sup>118</sup> This statement was included in the prepared statement of Senator Dewey Bartlett and presented for the record for inclusion in the hearing before the Senate Subcommittee on Manpower and Personnel. See Committee on Armed Services. *Costs of the All-Volunteer Force* (Washington, D.C.: U.S. Government Printing Office, 1978), 62.

<sup>119</sup> Grissmer et al. *Insuring Mobilized Reservists Against Economic Losses: An Overview* (Santa Monica, CA: RAND national Defense Research Institute, 1995), iii.

reported income losses during the 1991 war.<sup>120</sup> Additionally, when adding in those that reported economic losses in the form of additional expenses, the number jumps to two-thirds of the total.<sup>121</sup>

Other studies have noted that it is not simply the individual who can experience economic losses. Employers also constitute a critical component to the economic calculation. As Meyer points out, “business employers suffer one of the greatest liabilities of the Reserve Component Policy.” He cites a 1995 DoD Special Task Force Report on Quality of Life, which notes “employer support for the Reserve component is key to the long term stability and effective employment of the Total Force concept.”<sup>122</sup> Dallas Owens also raises major potential problems that might ensue for individuals and employers from long-term activation of Reserve Forces.<sup>123</sup> While Michael Dominguez stated that DoD has to recognize that Reservists are a “shared resource” between DoD and the civilian employer.<sup>124</sup> Robert Steel discusses the difficulty encountered by employers from the increased use of Reserve Forces, emphasizing that no employer is immune from losing a reservist to activation.<sup>125</sup>

In “Citizen Warriors: America’s National Guard and Reserve Forces and the Politics of National Security,” Stephen Duncan addresses the additional burden Reserve Forces endure, stating, “many reservists bear a disproportionate personal burden in conflicts for which they have been activated. Unlike their active counterparts, each day the reservists are on military duty, they are absent from their primary occupation. Often, this absence does in fact cause significant

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<sup>120</sup> Grissmer et al. *Insuring Mobilized Reservists Against Economic Losses: An Overview* (Santa Monica, CA: RAND National Defense Research Institute, 1995), xi.

<sup>121</sup> Grissmer, *Insuring Mobilized Reservists Against Economic Losses*, 36.

<sup>122</sup> Mark P Meyer. *The National Guard Citizen-Soldier: The Linkage between Responsible National Security Policy and the Will of the People* (Maxwell Air Force Base, AL: U.S. Air War College, 1996), 11.

<sup>123</sup> Owens, *AC/RC Integration*, 19.

<sup>124</sup> “The All-Volunteer Force: An Employer’s Perspective.” In Bicksler, Barbara A., Curtis L. Gilroy, and John T. Warner. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey’s, Inc., 2004), 324.

<sup>125</sup> *Ibid.*, 169.



financial hardship.”<sup>126</sup> There is a feedback loop in utilizing the Reserves and the effects it has on American society that are not present to the same degree as using Active-Duty Forces. A parallel exists with earlier Total Force studies. James Hosek, in discussing the cost of volunteerism versus conscription, points out that the so called “conscription tax” is “the implicit cost to the individual being derailed from a civilian career, involving lost training opportunities, lost opportunities to acquire valuable market experience, lost consortium with family and friends, and increased risk of harm or injury.”<sup>127</sup>

From a social cost standpoint, there appear to be parallels with reserve utilization that engender what might be termed a “reservist tax,” at least to the extent where mobilizations are unexpected. Ultimately, the costs of Reserve Forces utilization in the current Global War on Terrorism may prove too high to sustain current Total Force Policy. As Duncan points out, “If policy makers presume unfairly upon the high motivation of reservists, subtle but real pressures from reserve families and employers will eventually cause serious retention problems and, ultimately, recruiting problems.”<sup>128</sup> The literature suggests that economic costs must be seriously considered by senior policy makers to ensure sound decisions are made.

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<sup>126</sup> Stephen M. Duncan. *Citizen Warriors: America's National Guard and Reserve Forces and the Politics of National Security* (Novato, CA: Presidio Press, 1997), 121.

<sup>127</sup> James R. Hosek's "Commentary" in Fredland, J. Eric, Curtis Gilroy, Roger D. Little, and W. S. Sellman. *Professionals on the Front Line: Two Decades of the All-Volunteer Force* (Washington, D.C.: Brassey's, Inc., 1996), 119.

<sup>128</sup> Ibid., 234. Mark Eitelberg makes a related point quoting an old military manpower management motto in "The All-Volunteer Force After Twenty Years," stating "you enlist individuals but you reenlist families." Recruiting and retention are serious long-term concerns for Reserve utilization and perceived overutilization by families and employers. In Fredland et al. *Professionals on the Front Line: Two Decades of the All-Volunteer Force* (Washington, D.C.: Brassey's, Inc., 1996), 90.

### III. METHODOLOGY

#### A. OVERVIEW

This chapter essays a cost-benefit analysis (CBA)<sup>129</sup> of the roles chosen for United States Reserve Forces (USRF) during the GWOT. (The term USRF as used in this report refers to the National Guard and Reserves collectively.) While we aim to conduct a detailed quantification of costs, we also understand CBA methodology as a useful framework for analysis that enhances understanding of a complex policy issue.<sup>130</sup> Additionally, a well-defined framework provides clarity; as Stokey and Zeckhauser point out, “strict adherence to a clearly visible structure makes for far easier reading and comprehension, and opens up the analysis for evaluation and debate.”<sup>131</sup> Indeed, because decisions made within a cost-benefit analysis ultimately rely on the judgments made by the analyst, it is the ability for others to thoroughly evaluate the analysis in general and judgments in particular that provides one of its greatest strengths.<sup>132</sup> Through our CBA we build a relatively simple model

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<sup>129</sup> As Campen (1986) points out, the terms cost-benefit analysis (CBA) and benefit-cost analysis (BCA) mean the same, though he notes that American texts have tended to use BCA, while British texts use CBA. Given our heavy borrowing of Boardman’s methodology in our study, we employ the term cost-benefit analysis unless otherwise specified. James T. Campen. *Benefit, Cost, and Beyond: The Political Economy of Benefit-Cost Analysis* (Cambridge, MA: Ballinger Publishing Company, 1986), 12.

<sup>130</sup> Cost-benefit analysis has the additional benefit in the public policy arena of being a methodology “which has the effect of limiting the vagaries of the political process.” Thus, it is particular useful in addressing cost of war and Total Force policy decisions. In Stokey and Zeckhauser, *Primer for Policy Analysis*, 151.

<sup>131</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 6.

<sup>132</sup> As Stokey and Zeckhauser note, “(CBA) does force the judgments out into the open so that they can be subjected to public scrutiny and constructive debate.” Given the critically important nature of the decisions being made regarding the use of American military forces, such scrutiny and debate should be foundational to any democratic society. In Stokey and Zeckhauser, *Primer for Policy Analysis*, 158.

representative of the impacts of reserve employment on American society, informed by a truncated version of Boardman's et. al. "Major Steps in CBA"<sup>133</sup>:

1. Specify the set of alternative policies,
2. Decide who has standing,
3. Catalogue the impacts and select measurement indicators,
4. Predict the impacts quantitatively over the life of the policy,
5. Monetize all impacts.<sup>134</sup>

Since each alternative is considered to be equivalent in effectiveness, the costs are evaluated in the traditional manner by recommending the alternative with the least net costs.<sup>135</sup> However, as Stokey and Zeckhauser note, "because benefits and costs are measured in different units, cost effectiveness analysis provides no direct guidance when we are unsure whether the total benefit from an undertaking justifies the total cost."<sup>136</sup>

Concentrating on the first five steps of Boardman's nine-step process gets us to the essential elements of an economic analysis of a military problem, which Hitch and McKean (1980) specify as the objective, alternatives, costs, model,

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<sup>133</sup> Boardman, *Cost Benefit Analysis*, 8. These highlighted steps in Cost-Benefit Analysis closely mirror Stokey and Zeckhauser's foundational five-part framework for analysis of a policy issue, consisting of establishing the context, laying out the alternatives, predicting the consequences, valuing the outcomes, and making a choice. Their framework is explained in more detail in Stokey and Zeckhauser, *Primer for Policy Analysis*, 5.

<sup>134</sup> This truncated version of the cost-benefit analysis that we employ is more precisely termed a cost-effectiveness analysis (CEA), since the benefits are considered identical of using either alternative and hence only costs are compared. In Stokey and Zeckhauser, *Primer for Policy Analysis*, 153. Sassone and Schaffer also clarify the term by defining cost-effectiveness analysis as "a special form or subset of CBA distinguished by the difficulty with which project benefits can be identified in terms of dollars." In Peter G. Sassone and William A. Schaffer, *Cost-Benefit Analysis: A Handbook* (New York: Academic Press, Inc., 1978), 2.

<sup>135</sup> Neil E. Harlan, Charles J. Christenson, and Richard F. Vancil. "Cost Analysis," in Edwin Mansfield, ed., *Managerial Economics and Operations Research: Techniques, Applications, Cases, Fourth Edition* (W.W. Norton & Company, Inc., 1980), 37. The authors discuss the absence of revenue implications, which we have interpreted to similar imply the lack (analytically) of benefits for our analysis. Doing so allows us to "turn our attention to measuring the cost of pursuing each course of action," as the authors note.

<sup>136</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 155.

and criterion. Further defined, the objective is the goal of forces utilization, the alternatives the means of accomplishing the objective, costs are the resources required, the model is a set of relationships, and criterion the means to choose an alternative, such as the one yielding the greatest net benefit.<sup>137</sup> The analysis is not concerned with gathering specific data or providing a definitive course of action, but rather in applying the CBA methodology as a normative tool for practical application.

As Stokey and Zeckhauser note, the basic aim of all models is “reducing the complexity of the problem at hand by eliminating nonessential features so that we may concentrate on the features that describe the primary behavior of the significant variables.”<sup>138</sup> The principal outcome of such an analysis, as Sugden and Williams (1978) state, “is not an unqualified recommendation but a statement of the money values of those costs and benefits that the analyst has been able to value along with a list of those that he has not been able to value.”<sup>139</sup> Indeed, this is one of the strengths of conducting a cost-effectiveness analysis as it applies to defense policy alternatives, for as Neuburger and Fraser argue, “it provides the flexibility by which political judgment can be integrated into the formal decision making process rather than be added on as an afterthought.”<sup>140</sup>

As noted in our introduction, we use a type of CBA known as *ex post*—conducted after a policy has been implemented and results are discernable. We are analyzing what we classify as the operational reserve force utilization policy

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<sup>137</sup> Charles J. Hitch and Roland N. McKean. “Economic Choice in Military Planning,” in Edwin Mansfield, ed., *Managerial Economics and Operations Research: Techniques, Applications, Cases, Fourth Edition* (W.W. Norton & Company, Inc., 1980), 571.

<sup>138</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 13.

<sup>139</sup> Robert Sugden and Alan Williams. *The Principles of Practical Cost-Benefit Analysis* (Oxford: Oxford University Press, 1978), 237.

<sup>140</sup> Henry Neuburger and Neil Fraser, *Economic Policy Analysis: A Rights-Based Approach* (Brookfield, VT: Ashgate Publishing Company, 1993), 13. By not reducing cost and benefits to a single number but providing a list of quantifiable and nonquantifiable impacts as they relate to the alternatives, decision makers (in our case, senior policy makers) are left to interpret the analysis and weight various aspects accordingly.

utilized over a five year period from 2001 - 2006. In contrast to *ex ante* CBA (conducted prior to a policy decision), *ex post* CBA allows for use of observed data on impacts rather than predictions, and hence provides more accurate information. As Boardman et al., point out, this type of CBA is useful both as a decision-making and as an evaluative tool.<sup>141</sup> Additionally, what we classify as strategic reserve force utilization serves as the counterfactual (alternative policy) to the operational reserve force utilization policy that has actually been implemented by the Bush Administration; i.e., it serves as the “what if” part of the equation if the USRF had been kept as a strategic reserve force and the Active-Duty force had been increased instead of being utilized as an operational force.

Our intent in this project is to create a “useful” model<sup>142</sup> to capture the social cost of reserve employment. In doing so, we will lay out two mutually exclusive alternatives based on the nature of reserve utilization, which we distinguish as employing Reserve Forces as an operational force versus the counterfactual of increasing the Active-Duty Force while keeping the Reserve Forces as a strategic reserve force. Each alternative consists of certain benefits and costs to society that we must limit or define.

This chapter reviews the methodology that we employ to develop our CBA paradigm. First, we specify the alternatives. Next, we describe who has standing. Then, we catalog the impacts and select our measurement indicators. After that, we predict impacts. Subsequently, we define how we will monetize the impacts considered in these policy decisions. Finally, we consider “four

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<sup>141</sup> Boardman, *Cost Benefit Analysis*, 3.

<sup>142</sup> We utilize Stokey and Zeckhauser's definition of a model as a “simplified representation of some aspect of the real world ... sometimes a situation or process ...a purposeful reduction of a mass of information to a manageable size and shape.” As the authors point out, one always has to deal with the question of the tradeoff between the gains of insight and manageability with the sacrifice in realism engendered by the model. In Stokey and Zeckhauser, *A Primer for Policy Analysis*, 8.

important potential types of errors: omission and double-counting errors, forecasting errors, measurement errors, and valuation errors”<sup>143</sup> that may impact our model.

## **B. SPECIFICATION OF ALTERNATIVES**

Our first step is to specify alternative policies. This is an important step in policy analysis and is key to providing the proper foundation to decision-making. Analyzing an inadequate or incomplete list of alternatives will lead to a detailed analysis resulting in suboptimal choices, leading Harlan et al. (1980) to conclude that “analysis is no substitute for imagination.”<sup>144</sup> We could consider the full spectrum of military force allocation options available to the United States in conducting the GWOT. Because our analysis would quickly become difficult to cognitively manage all of the possible force employment policy permutations<sup>145</sup> and because of our resource limitations, we will narrow our considerations to two of the broadest and most obvious alternatives. We can therefore offer a deeper analysis of a single alternative to our counterfactual.<sup>146</sup>

## **C. WHO HAS STANDING**

Next, we consider whose benefits and costs are important within the scope of these policy decisions. In order to include a reasonably sized pool of prospective beneficiaries, we must narrow our focus from a global to a national perspective. As Sassone and Schaffer (1978) point out, “cost-benefit analysis is an attempt to assess social costs and social benefits ... clearly, then, costs and

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<sup>143</sup> Boardman, *Cost Benefit Analysis*, 5.

<sup>144</sup> Harlan et al., “Cost Analysis”, 35.

<sup>145</sup> Boardman argues that “in practice, individuals can only focus on approximately four to seven alternatives, at best.”, *Cost Benefit Analysis*, 7. Consequently, Boardman concludes that a fully optimized policy decision is impossible.

<sup>146</sup> As McKean notes, this and similar analyses “must be regarded as inputs to decisions, not as oracular touchstones.” Roland N. McKean, “Cost-Benefit Analysis,” in Edwin Mansfield, ed., *Managerial Economics and Operations Research: Techniques, Applications, Cases, Fourth Edition* (W.W. Norton & Company, Inc., 1980), 598.

benefits depend on who is included in society.”<sup>147</sup> The term society is used to represent “all of the people whose interests are affected and supposedly considered when a particular decision is made.”<sup>148</sup> As Mishan (1973) points out, “in cost-benefit analysis we are concerned with the economy as a whole, with the welfare of a defined society, and not any smaller part of it.”<sup>149</sup>

Our national perspective encompasses the American populace and the United States Government. Collectively, we classify this as American society. Additionally, we limit the boundaries of American society conceptually to provide for analytical clarity in looking at Reserve Force utilization. This classification is consistent with the federal CBA guidelines outlined in OMB Circular A-94.<sup>150</sup> Like Stokey and Zeckhauser, “we assume a decision making unit in which no consequences spill over to affect individuals in other jurisdictions, whether those jurisdictions are defined by geography ... or whatever.”<sup>151</sup> We chose to focus on a national perspective as a first step toward a global analysis.

#### **D. CATALOGING IMPACTS AND SELECTING MEASUREMENT INDICATORS**

We will attempt to list the social cost impacts of our two alternative policies and clearly quantify them by associating appropriate measurement indicators.<sup>152</sup> As Sassone and Schaffer point out, “the *raison d’être* of quantification is to facilitate the analyzing of trade-offs.”<sup>153</sup> We are mostly interested in cataloging

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<sup>147</sup> Sassone and Schaffer, *Cost-Benefit Analysis*, 159. The authors provide a good discussion on the definition and boundaries of the term “society” for the purposes of CBA.

<sup>148</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 258.

<sup>149</sup> Mishan, *Economics for Social Decisions*, 11.

<sup>150</sup> Office of Management and Budget (OMB) Circular A-94, “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs” dated 29 October 1992.

<sup>151</sup> *Ibid.*, 259.

<sup>152</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 153. In addressing defense expenditures and policy decisions, Stokey and Zeckhauser note that it is difficult to compare costs and benefits directly because of the problems engendered when attempting to monetize benefits. As such, they suggest investigating alternatives “to determine which of them is the lowest cost method of providing (a specific) capability.”

<sup>153</sup> Sassone and Schaffer, *Cost-Benefit Analysis*, 43.

the impacts that “affect the utility of individuals with standing.”<sup>154</sup> Impacts must demonstrate a cause-and-effect relationship between an outcome of the policy and its usefulness to those who have standing. Some impacts are so obvious that they may be overlooked or dismissed, while others may be obscure and easily missed. According to McKean (1980), there are four categories of which impacts fall into: costs and benefits (commensurable effects) that can be monetized (measured in monetary units); other commensurable effects that cannot be monetized; incommensurable effects that can be quantified but not in terms of a common denominator; and incommensurable, nonquantifiable effects.<sup>155</sup> McKean notes that “an appreciation of cost-benefit analysis also requires an awareness that incommensurables and uncertainties are pervasive.”<sup>156</sup> Campen (1986) distinguishes among impacts (cost/benefit or effect) by citing three principal distinctions: real versus pecuniary (transfer) effects; direct (primary) versus indirect (secondary) effects; and tangible and intangible effects.<sup>157</sup> One of these, transfer effects, are “to the economy as a whole neither costs nor benefits; only a part of the pattern of distributing the aggregate product.”<sup>158</sup> These transfer effects are of particular interest when evaluating among the two specified alternatives within this study.

Defining the relevance and relationship of some impacts may require exhaustive explanation. Many of the social impacts we consider do not have universally accepted measurements. As Ray (1984) notes, difficulty in measuring costs and benefits sometimes makes it impossible to judge a project’s

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<sup>154</sup> Boardman, *Cost Benefit Analysis*, 10.

<sup>155</sup> McKean, “Cost-Benefit Analysis,” 593. McKean notes that “this sort of distinction between types of effects does serve a useful purpose, especially in warning us of the limitations of cost-benefit analysis.”

<sup>156</sup> *Ibid.*, 595.

<sup>157</sup> Campen, *Benefit, Cost, and Beyond*, 32. The author provides definitions and examples of each of these major distinctions.

<sup>158</sup> Mishan, *Economics for Social Decisions*, 60. As Mishan warns regarding CBA, the analyst “must be careful to exclude (transfer payments) from the relevant magnitudes.”



merits with much confidence.”<sup>159</sup> In some cases, shadow pricing is used, an approach used to measure effects by assigning values in areas where they are not easily observable.<sup>160</sup> The Value of Statistical Life (VSL) represents a fervently debated social cost and provides a good example of shadow pricing.<sup>161</sup> When confronted by controversial or complex impacts for which economists or social scientists have not developed clear measurements, our choice of measurement indicator may rely on available information and the ability to monetize the impact.

For controversial impacts, we develop measurements based upon the best data available, identify why we selected it, and then incorporate the results in our overall CBA analysis. Although we attempt to develop a reasonably comprehensive list of impacts, it is inevitable that we may omit some relevant impacts. We will discuss this type of error further in paragraph G.

#### **E. PREDICTING IMPACTS QUANTITATIVELY THROUGHOUT THE PROJECT LIFE**

Once we have generated our list of impacts and have defined appropriate measurements for them, we must extend the impacts for each policy alternative accordingly quantitatively over a notional life of the GWOT. As Campen notes, “the actual quantitative measurement of benefits and costs is, of course, the heart of CBA.”<sup>162</sup> We will construct estimates for each alternative.

However, predicting impacts can be especially challenging. It is difficult to foresee how individuals or organizations with standing will react to different

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<sup>159</sup> Anandarup Ray. *Cost-Benefit Analysis: Issues and Methodologies* (Baltimore, MD: The Johns Hopkins University Press, 1984), 7. However, Ray notes that even in such situations, CBA may be useful for providing analytical clarity to the problem and indicating ways of increasing confidence in one’s ability to measure impacts accurately.

<sup>160</sup> Boardman, *Cost-Benefit Analysis*, 75. Boardman points out, however, that “even when shadow prices are used, the resulting measures of benefits and costs may vary from their conceptually correct counterparts,” and hence it is important to address this condition.

<sup>161</sup> Ibid.

<sup>162</sup> Campen, *Benefits, Costs, and Beyond*, 34.

policies; that is, unintended consequences are always possible. Stakeholders may contradict predicted behavior through compensating or adjusting behavior. For example, employees of an organization that loses a reserve employee to a mobilization may work harder out of patriotism, thus increasing instead of decreasing the organization's productivity. Substitution or spillover effects may arise unexpectedly as a policy alternative affects the conduct of third parties. For example, the mobilization of a reservist may actually motivate others to enlist in the military. Predicting these impacts also employs uncertain data sets. Adopting any given Value of Statistical Life measurement can be debated because no clear answer has been generally accepted. Boardman emphasizes that "prediction is especially difficult where projects are unique, have long time horizons, or relationships among variables are complex."<sup>163</sup> A lack of understanding about policy cause-and-effect correlations can cause omissions of significant consequences as well as considerable forecast errors.

## **F. MONETIZATION OF ALL IMPACTS**

We will monetize policy social impacts in order to establish a common metric for their valuation. As Harlan et al. (1980) note regarding CBA's used to address resource allocation problems, "money is the best common denominator for resources and is the basic 'scarce resource' (we would) like to utilize in an optimal fashion."<sup>164</sup> Our estimates will preferably be specific to Americans during a relevant period while CBA measurements are often founded on "willingness to pay".<sup>165</sup> Boardman explains that willingness-to-pay can be established from suitable market demand curves "where markets exist and work well."<sup>166</sup> Those impacts for which no one is willing to pay have zero value.

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<sup>163</sup> Boardman, *Cost Benefit Analysis*, 12.

<sup>164</sup> Harlan et al., "Cost Analysis," 45.

<sup>165</sup> Boardman, *Cost Benefit Analysis*, 14.

<sup>166</sup> Ibid.

As many CBA analysts have done in the past, we will not attempt to create new data sets as we develop our model. Budgetary cost data is a useful starting point for discussing costs as a major part of total economic cost. An important distinction between the two is found in the concept of opportunity cost. Budgetary cost “measures the cost of resources consumed in terms of the outlay originally made to acquire them,” whereas economic cost “measures their cost in relation to alternative opportunities for their employment.”<sup>167</sup> As the literature review indicated, many impacts we identify have already been addressed within the Cost of War literature spanning a range of estimates dealing with the economic costs of the GWOT. These monetized values can be used directly or modified as required to consider the issue of Reserve utilization. Where appropriate values are readily available, we will use them. Where values are not available, we will include rough estimates with an explanation.

## **G. POTENTIAL TYPES OF ERROR**

The usefulness of a CBA is directly related to the quality of information employed in the analysis. While an *in medias res* CBA typically has more accurate information than an *ex ante* analysis because the policy decision is ongoing, it is generally less accurate than an *ex post* perspective. However, it is unlikely that error is completely eliminated from an analysis. One must therefore always be aware that analytical techniques are “potentially dangerous to the extent that they convey an aura of precision and objectivity.”<sup>168</sup> This section considers four significant types of errors: omission, forecasting, measurement, and valuation. These four types are especially significant because competent analysts can mitigate most other types of errors.

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<sup>167</sup> Harlan et al., “Cost Analysis,” 41.

<sup>168</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 135.

## 1. Omission and Double-Counting Errors

A large number of variables are relevant to complex policy decisions. It is therefore easy for analysts to exclude some inadvertently. Analysts also may decide to omit certain variables too easily because they consider them too insignificant. This becomes even more difficult when experts disagree on certainty or impact. Choosing the appropriate variables to include in the analysis can elicit simultaneous praise and critique from technical experts with widely varying opinions. As Stokey and Zeckhauser point out, analyses “can be no more precise than the assumptions and valuations that they employ.”<sup>169</sup>

The opposite of omission is including factors more than once. Double counting is the process of considering a factor as costs or benefits in, for example, both the primary and the secondary markets. The social cost of increased family counseling for deployed reservists and the cost of family counselors not being available to other families needing their services marks costs in both primary and secondary markets. Boardman explains that “benefits (or costs) in secondary markets should not be included when prices equal social marginal costs.”<sup>170</sup> That is, when the price of an impact within a secondary market is equal to the additional incremental cost of that impact on society, the impact should not be considered.

Importantly, we must guard against what Campen refers to as an “overemphasis on readily measurable consequences,” since there appears to be a systematic bias toward incorporating elements that are easily quantified while omitting those that can only be qualified. As a result, “quantified effects tend to dominate consideration, even if the unquantified effects are believed to be more

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<sup>169</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 135.

<sup>170</sup> Boardman, *Cost Benefit Analysis*, 509.

important.”<sup>171</sup> To mitigate omission errors in this report, we attempt to clearly identify all significant policy influence factors. Omissions may be easily incorporated into our framework later.

## **2. Forecasting Errors**

Estimating the future is notoriously difficult. Predicting changes in social values, empirical predispositions, and policy objectives can be difficult. Error is amplified as the forecast is extended further into the future. As Stokey and Zeckhauser note, “one of the disturbing features of benefit-cost analysis is that, as history unfortunately shows, it offers no automatic protection against heroically bad assumptions.”<sup>172</sup> While some impacts are easily identified and translated into accurate forecasts because they can be compared with similar historical events, others are very complex, unique, and more distant.

Changing American public sentiment provides a good example of the difficulty of predicting impacts in the GWOT. Immediately following a major terrorist attack such as the ones that took place on September 11, 2001 the American public seemed likely to support any effort against terrorism. As time has passed, the public’s demand for protection has appeared to become much more elastic. An analysis conducted in 2002 would likely produce much different results than one conducted in 2007 when considering social costs and benefits of the GWOT.

## **3. Measurement Errors**

Estimating impacts often leads to miscalculation because they are incorrectly attributed. The benefits of increased military action in the Middle East

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<sup>171</sup> Campen, *Benefit, Cost, and Beyond*, 68. Campen points out the difficulties engendered in attempting to incorporate quantitative and qualitative information into the policy choice calculus, and raises the argument of critics that because of the difficulties, that CBA is perhaps not adequately suited for the task at hand. While we appreciate the challenges posed by using this methodology, we strongly disagree with such critics.

<sup>172</sup> Stokey and Zeckhauser, *Primer for Policy Analysis*, 148.

may be incorrectly assessed as reducing the number of terrorism related incidents if other factors are more influential such as reduced levels of tourism. Alternatively, if incidents of terrorism appear to be increasing as a result of military action in the Middle East, it may be more heavily influenced by terrorism related incidents being reported more frequently or accurately. Measurements are significantly influenced by technology and the methodology used to measure the given factors. As Hitch and McKean (1980) note, the benefits and costs of military alternatives or systems often have no common measure, and as such, we must deal with approximations that allow us to say that one alternative is better than another, rather than the ideal or optimal choice.<sup>173</sup>

#### **4. Valuation Errors**

Valuation errors are attributable to inaccurate estimates of social values typically called shadow prices. One source of valuation error previously discussed is the Value of a Statistical Life (VSL). In terms of shadow prices in the GWOT, the maximum amount of value that the public demands for an additional life is its shadow price. The VSL has been hotly debated and appears to depend upon social status and other factors.<sup>174</sup> The VSL is a potential valuation error in a CBA of Reserve Forces employment in the GWOT. The relative prices of the many factors considered in a CBA tend to change over time causing additional valuation errors. By clearly establishing valuation method, our

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<sup>173</sup> Hitch and McKean, "Economic Choice in Military Planning," 573. As the authors point out, "it cannot be stated too frequently or emphasized enough that economic choice is a way of looking at problems and does not necessarily depend upon the use of any analytic aids or computational devices." Defense policy choices are often complex, relying on fuzzy data and numerous incommensurable variables. Therefore, the analytical exercise used to understand the problem is often much more important, insightful, and valuable than any singular answer achieved at the end of the exercise itself. McKean makes this specific point in another work where he states "this process of redesigning the alternatives is probably a more important contribution than the final cost-effectiveness exhibits." In McKean, "Cost-Benefit Analysis," 594.

<sup>174</sup> A good discussion of the VSL debate on what has been criticized as an inaccurate valuation of benefits and costs is provided in Campen, *Benefits, Costs, and Beyond*, 65. As Campen notes, VSL provides a clear example of the problems with valuation, but difficulties are applicable to a large array of effects.

CBA can be adjusted to meet changing willingness to pay. Future analysis can easily be adapted from our CBA evaluation paradigm.

These four types of errors can have significant impacts on the results of our CBA. While we appreciate these methodological limitations, we believe that CBA is a valuable tool for understanding and evaluating defense policy alternatives “when it is properly understood, honestly and competently applied, and correctly interpreted.”<sup>175</sup> Depending on whether costs and benefits move in the same direction or not, their effects on each other might be either mitigating or amplifying. Although this analysis is conducted *ex post*, we nonetheless rely on cost estimates to quantify the impacts associated with the alternatives. Many of these cost estimates are very complex and can be difficult to independently estimate. Finally, the overall objective of the GWOT is somewhat difficult to specify with any precision. Is our objective to eradicate all terrorism, to contain it, to prevent it from influencing our national interests? Clearly, the social costs of employing Reserve Forces may or may not change depending upon the objectives they pursue.

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<sup>175</sup> Campen, *Benefit, Cost, and Beyond*, 79.

## **IV. ANALYSIS**

### **A. OVERVIEW**

In our analysis, the operational Reserve Forces policy focuses on the current mobilization<sup>176</sup> of Reserve Forces to supplement and fulfill full-time military duties and missions and compares it with the alternative of maintaining U.S. Reserve Forces (USRF) as a strategic military reserve force while increasing Active-Duty forces. This entails several economic benefits and costs—both budgetary and social—to American society, which has standing for the purposes of our analysis. We then focus on key impacts, their measurement indicators, and dollar values assigned to them. For the purposes of simplicity, we estimate relative costs of the alternatives as necessary.

### **B. SPECIFICATION OF ALTERNATIVES**

We set out to develop a proper foundation for public policy by specifying alternative policy actions. While selecting too few alternatives can lead to a narrow perspective, if we considered all possible military force alternatives available for the GWOT, we would quickly become bogged down. Because of time limitations, we narrow our investigation to these two salient alternatives, and offer an accordingly deeper analysis. While a fully optimized policy decision is improbable, we believe our two alternatives represent the most realistic and viable choices of military force employment to support the GWOT.

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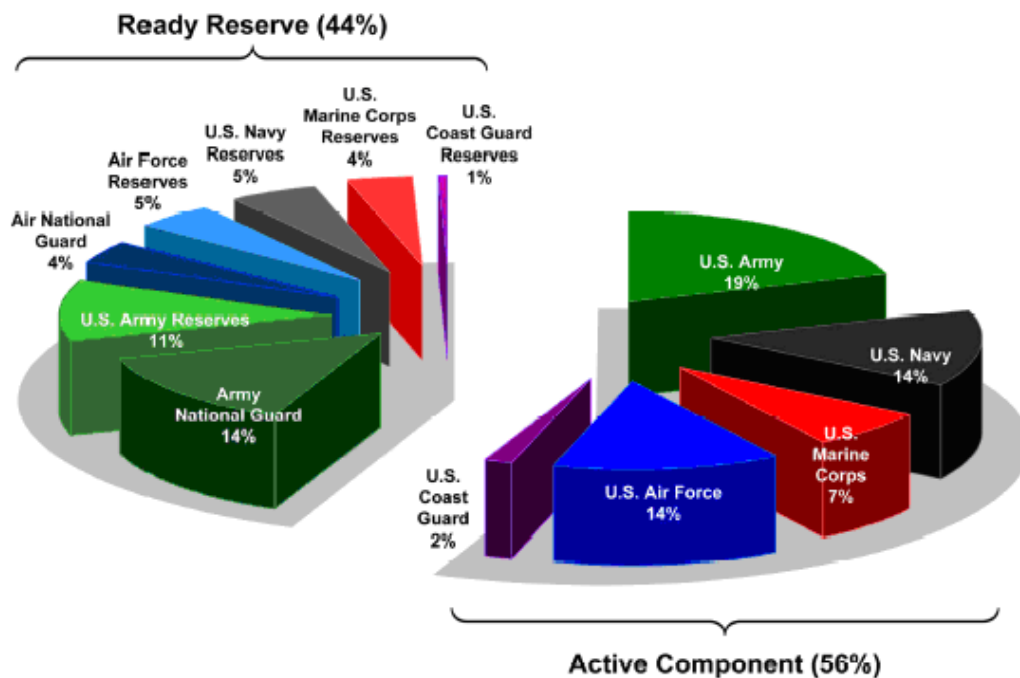
<sup>176</sup> We utilize the terms mobilization, activation, call up, and utilization interchangeably, although we recognize that they may have more specific meanings in different contexts, as pointed out in Heidi Golding's CBO testimony before the Commission on the National Guard and Reserves. Congressional Budget Office, *The Effects of Reserve Call-Ups on Civilian Employers*, Washington, D.C.: 17 May 2007, 1.



## 1. Alternative One

The first policy alternative we consider is the status quo: employing USRF as an operational force in fighting the GWOT. Today's force structure policy selects and employs the Reserve Forces to execute missions, augment and reinforce the active component. Reserves, in fact, currently comprise 44% of the Total Force, as seen in Figure 5.

**Figure 5. United States Total Force<sup>177</sup>**



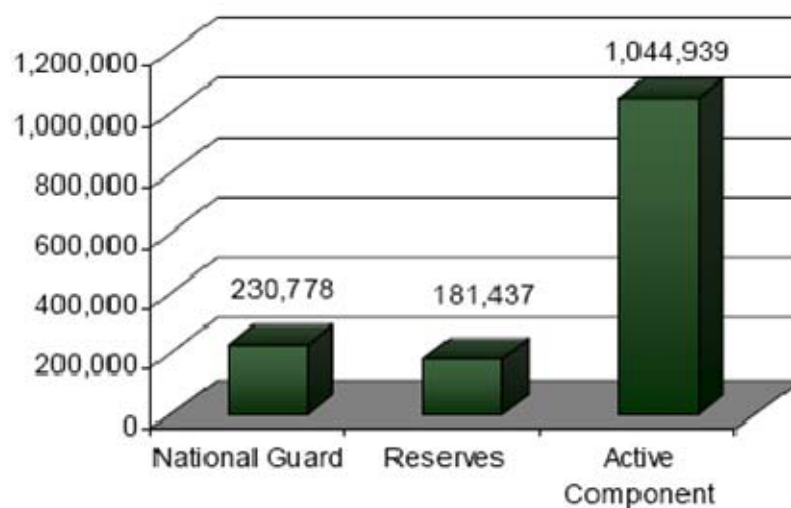
Source: The OASD-RA, December 2006.

Expanding employment from a total of 1.4 million duty-days in 1989 to over 60 million duty-days in 2004, the Reserve Forces are clearly being

<sup>177</sup> Commission on the National Guard and Reserves. Second Report to Congress. 1 March 2007, 13.

employed at unprecedented rates not experienced since World War II.<sup>178</sup> Figure 6 demonstrates that from 2001 to 2006, the Reserve Forces have made up over one-quarter—about 28 percent—of all U.S. personnel deployed to Iraq and Afghanistan. It is indisputable that the current force structure is employing the Reserve Forces as a fully operational force.

**Figure 6. Total Number of U.S. Personnel Deployed to Iraq and Afghanistan, September 2001 – November 30, 2006<sup>179</sup>**



Source: Department of Defense, Office of the Assistant Secretary of Defense, Legislative Affairs, January 2007.

The total number of U.S. military personnel that have been deployed are presented in Figure 6. From 2001 to 2006, 412,215 members of the Reserve Forces (230,778 National Guard and 181,437 Reserves) and 1,044,939 Active Duty personnel have deployed, for a total force deployment of 1,457,154 military personnel. We consider the average length of deployment to be one-year,

<sup>178</sup> "The All-Volunteer Force: An Employer's Perspective." In Bicksler et al. *The All-Volunteer Force: Thirty Years of Service* (Washington, D.C.: Brassey's, Inc., 2004), 171.

though individual and select unit deployments may be more or less.<sup>180</sup> Hence, we consider this total number of personnel deployed to also equally represent the total number of man-years of forces employed for the purposes of our analysis.

## **2. Alternative Two**

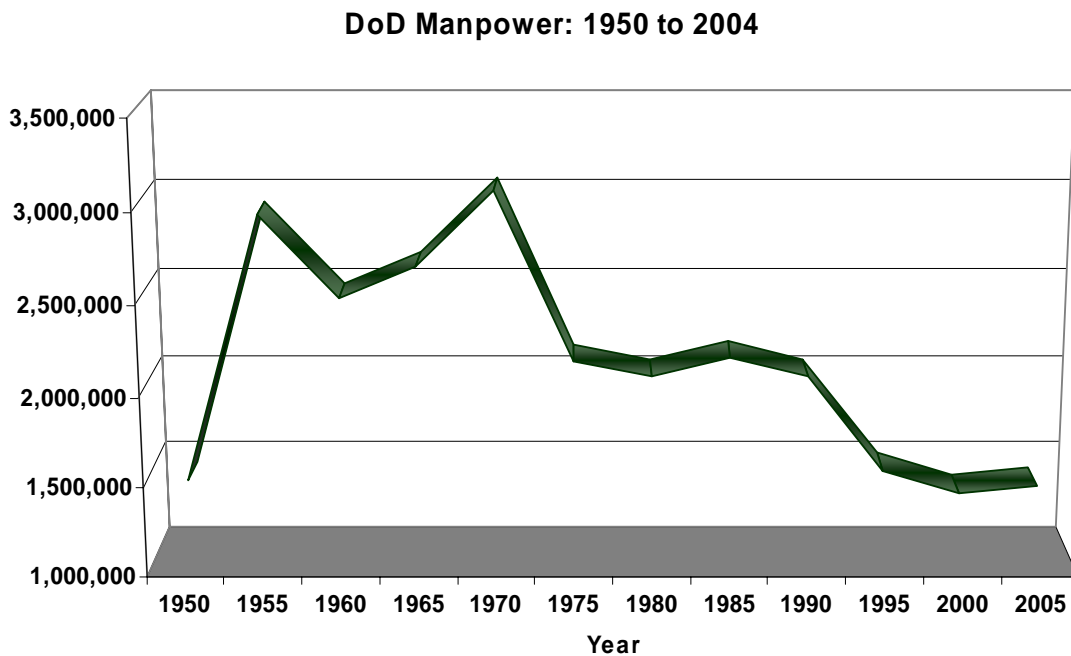
The second alternative we consider is maintaining USRF as a strategic reserve force while increasing the active component end strength in order to meet mission requirements. This is the original strategy adopted by the Total Force Policy (of 1973), recommended by the Gates Commission in 1969 and implemented by President Nixon. This policy has eroded as the active component was downsized and operational tempo increased after 1991. The Reserve Forces have compensated for the diminished active component in order to meet the ever-expanding obligations of the U.S. military. Active Duty DoD personnel end strength from the Korean War era through the current GWOT is portrayed in Figure 7.

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<sup>179</sup> Congressional Record Service Report to Congress. *National Guard Personnel and Deployments: Fact Sheet* of 10 January 2007. Note that the vertical axis represents the total number of military personnel deployed during the specified time period for each component represented on the horizontal axis.

<sup>180</sup> Loughran, *Activation and the Earnings of Reservists*, 1. Loughran et al. utilize one-year Reserve activations as a foundation for their study. For comparative purposes, we consider active-duty deployments to average one-year as well.

**Figure 7. DoD Manpower (Active Duty Force): 1950 to 2004<sup>181</sup>**

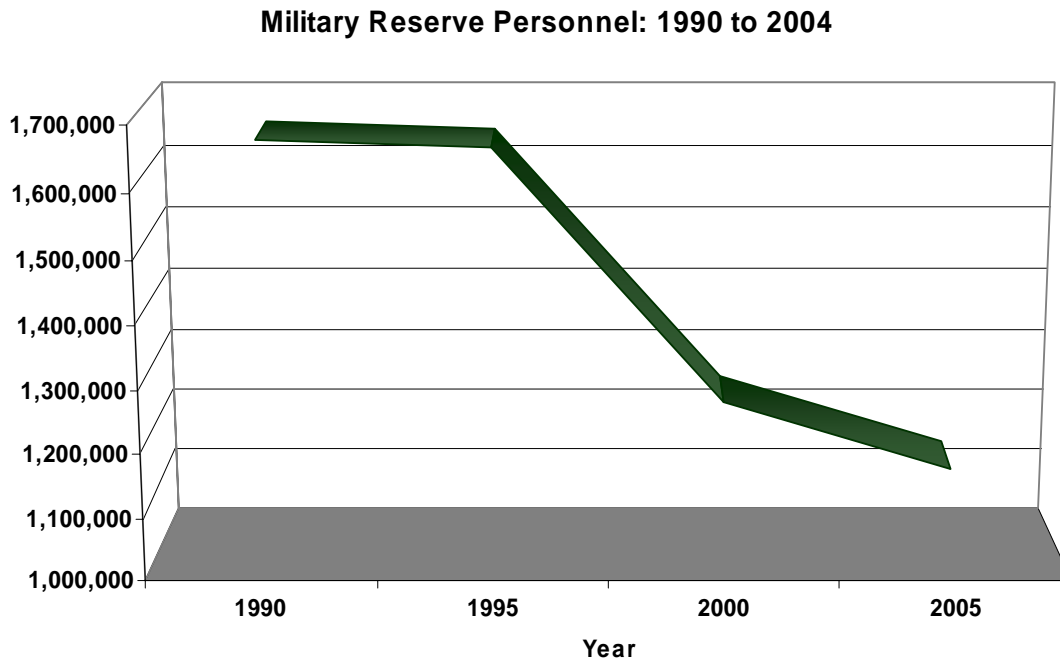


Although the Reserve Forces have undertaken increased employment as U.S. military commitments have expanded and active component end strength has dwindled, the Reserve Component has also experienced diminishing end strength. From 1990 to 2004, the Reserve Component has declined by about a half of a million personnel (from 1,658,707 to 1,145,035) as illustrated in Figure 8.<sup>182</sup>

<sup>181</sup> U.S. Census Bureau, *Statistical Abstract of the United States: 2006*. (Washington, D.C.), 342. This figure shows the general decline in the size of the Active Duty force over the past 50 years. Consequently, the number of missions assigned to Reserve Forces has increased.

<sup>182</sup> U.S. Census Bureau, *Statistical Abstract of the United States: 2006*, 345.

**Figure 8. Military Reserve Personnel: 1990 to 2004**



Alternative Two eliminates reserve augmentation of the active component to maintain the USRF as a strategic reserve. Instead, the active component end strength would be increased to meet operational requirements by the corresponding amount that the USRF had in fact been utilized in Alternative One. Thus, for Alternative Two, no USRF forces are employed in support of the GWOT and 1,457,154 Active-Duty personnel are deployed from 2001 – 2006. Alternative Two serves primarily as a notional benchmark, since we recognize that Total Force structure includes many necessary support functions within the USRF and that the United States would have been unlikely to effectively prosecute the GWOT without using at least some reserves in an operational capacity. It is interesting to note, however, that President Bush announced his desire to increase the Army and Marine Corps active component end strength by 92,000 during his State of the Union speech in January 2007. Whether or not this addition to force structure would result in a decrease in the use of the USRF is not yet known, but the Administration's decision may suggest a recognition of the high cost of Reserve utilization.

Edward Bruner explains in his CRS Report that “many voices in Congress and the military community publicly support an increase [in active duty end-strength], and few argue against it unconditionally.”<sup>183</sup> He also notes that the appropriate end strength must be determined by considering expected future requirements.

### **C. WHO HAS STANDING**

To create a useful paradigm for policy makers, we narrow our focus to a national perspective. We therefore consider social costs affecting the American populace and the United States Government, collectively classified as American society. Our classification of “society” encompasses all American citizens. While U.S. military force employment policies clearly have far-reaching implications, we limit our scope to American society in the interests of clarity and necessary brevity.

With American society as our defined unit of analysis having standing, we divide society into the following categories: Employers; the United States Government; Reservists; and Families of Reservists. This classification allows us to analyze the impacts with greater granularity and compare more clearly between the two Alternatives presented. The subunit impacts collectively total to the net costs to American society.

### **D. CATALOGING IMPACTS AND SELECTING MEASUREMENT INDICATORS**

In this section, we provide a list of social costs of our two alternatives. As much as is reasonable, we quantify the social costs by referring to suitable measurement values. Once the impacts are quantified, each can be assessed

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<sup>183</sup> Edward F. Bruner. *Military Forces: What is the Appropriate Size for the United States?* (Washington, D.C.: Congressional Research Service, 10 February 2005), 4.

more readily. However, not all impacts are amenable to quantification and therefore their evaluation remains more challenging.

Impacts include the resources required to achieve a particular policy or course of action and the products that are created as a result of implementing the policy or course of action. Boardman et al., describe impacts as inputs and outputs.<sup>184</sup> Each policy decision has impacts upon American society. In this section, we catalog the relevant social costs that have an affect on American society. Several of these impacts may simply represent transfers between groups within American society, yielding no net social cost. We identify such transfers where relevant.

In order to meaningfully compare the alternatives, it is critical to quantify the impacts that affect American society. While there are no universally accepted measurements for many of the social impacts considered, we develop measurements based upon available data. We identify our rationale for given measurements and then evaluate the data. Although we attempt to develop a comprehensive list, it is likely that we have omitted some relevant factors.

Table 1 lists impacts according to our four subsets of American society. As mentioned earlier, the four subsets include employers, the U.S. government, Reserve Forces, and families of reservists. Following Table 1 are additional details about each of the impacts, why each impact was selected, and the metrics associated with each impact.

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<sup>184</sup> Boardman, *Cost Benefit Analysis*, 9.

**Table 1. Catalog of Impacts of Employing the Reserves and National Guard**

<b>Employers</b>
Business Productivity
Hiring Temporary Labor
Additional Workload Placed on Remaining Staff
Paying Salaries for Deployed Employees
Re-Training Returning Employees
Innovation
<b>Government</b>
Fatality Rates of Reserve Service Members
Recruiting Costs
Retention Costs
Paying for Remote Mental Health Treatment
Mobilization Costs
First Responders
<b>Reservists</b>
Civilian Wages
Cost of Injuries
Potential Job Loss
Cost to Self-Employed Businesses
<b>Families</b>
Levels of Child Abuse
Children's Educational Test Scores
Depression
Divorce Rates
Household Costs
Spousal Earnings
Health Care Costs
Family Disruption Costs

## 1. Employers

a. Business Productivity. Business productivity may be affected by Reserve utilization. Businesses that lose deploying reservists experience a loss in productivity because of the loss of continuity and resident knowledge from the departing employee. While large corporations appear to absorb such losses as a small portion of their total income, small businesses and entrepreneurs appear to be affected the most. Our metric is the number of businesses affected by reserve mobilizations.



b. Hiring Temporary Labor. Businesses who must hire temporary labor to backfill positions vacated by deploying reservists experience costs in advertising, selecting, and training temporary employees. Fay Hansen explains that “costs occur when employers pay overtime premiums to their remaining workers or hire temporary workers to do the work of deployed reservists.”<sup>185</sup> Our metric is the number of positions filled by employers with temporary labor to replace deployed reserve employees.

c. Additional Workload on Remaining Staff. Whether or not a business chooses to backfill a vacant position from a deploying reservist, co-workers often have to pick up the slack from the loss. Braun Consulting explains that, “both employers and employees, in all workplaces, are often working harder and for more hours under difficult conditions, because of the absence of their fellow workers called up to active duty.”<sup>186</sup> Our metric is the number of job positions not backfilled by temporary labor.

d. Paying Salaries for Deployed Employees. Some employers choose to continue paying a full or partial salary to employees who deploy because of involuntary activations. In a U.S. Senate press release, Senator Chuck Schumer explains that, “a reservist call-up is expensive for local public safety departments because they often pay the salaries and benefits of reservists while the reservists are deployed.”<sup>187</sup> These costs, however, represent transfers and hence a net social cost of zero to American society. Our metric is the number of reservists who are paid both their civilian job salary and their military pay.

e. Re-training Returning Employees. While deployed, existing human capital depreciates over time. Job skills atrophy with the employees absence and developing technologies are not assimilated. The deployed reservist is not

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<sup>185</sup> Fay Hansen. “Gearing up for Active Duty.” (Workforce: January 2003).

<sup>186</sup> Braun Consulting. “Braun Consulting News.” (Vol. 7 No. 4 Winter 2003).

<sup>187</sup> Charles Schumer. “Schumer: Reservist Call-Up Taking Drove of New York Cops off the Streets; Costing Local Police Departments Millions.” (United States Senate: Press Release, 24 September 2003).

building up specific job-related human capital in the form of tenure and training. Once a deployed reservist returns to work, the employer often must retrain the employee in order to return atrophied skills and to make the employee current with recent developments. Our metric is the total number of demobilized reservists who need retraining.

f. Innovation. Business innovation may be affected by Reserve utilization. Organizations that lose reservists to deployments no longer have experienced people available to engage in or support innovation. According to the CBO, “there are no precise data on the number of reservists who are key employees or who have highly specialized skills.”<sup>188</sup> Therefore, we cannot establish a relevant measurement indicator.

## **2. Government**

a. Fatality Rates for Reservists. This impact recognizes USRF who die in support of the GWOT. It is measured by the number of USRF who suffer GWOT related fatalities.

b. Recruiting Costs. As reserve units mobilize more frequently, reserve forces may experience increased costs to meet recruiting goals because enlistees understand that they can no longer enlist for traditional reserve service because they will be called to active duty regularly. Bilmes and Stiglitz (2006) argue that “the military has responded to this challenge by hiring thousands of additional recruiters, increasing its national advertising campaigns, offering sign-up bonuses of up to \$40,000 for new recruits, offering higher retirement and disability benefits, increasing the “death gratuity” to \$100,000, and providing re-enlistment bonuses of up to \$150,000 for experienced troops”.<sup>189</sup> Our metric is the number of recruits required to fill annual reserve component recruiting goals.

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<sup>188</sup> Congressional Budget Office. The Effects of Reserve Call-ups on Civilian Employers. (Washington, D.C., May 2005), 2.

<sup>189</sup> Bilmes, *The Economic Cost of the Iraq War*, 11.

c. Retention Costs. Reserve Forces may experience increased costs to retain service members who originally enlisted as a patriotic way of working for their national defense on a part-time basis. The Kimery Report emphasizes that “doctors, lawyers, policemen, teachers, businessmen and accountants were supposed to be part-time soldiers. But the Pentagon has come to rely on them for nearly half of its full-time military force abroad to fight a full-time war. And too many are on their fourth and fifth deployment.”<sup>190</sup> Our metric is the total dollar amount of re-enlistment bonus payments made.

d. Paying for Remote Mental Health Treatment. Reservists returning home from deployments do not have ready access to counselors located on or near major military installations. The government accordingly funds many counselors to support reservists near their homes, in addition to higher patient loads placed on Veterans Administration health services. Our metric is the number of reservists seeking treatment for mental health treatment following their demobilization.

e. Mobilization Costs. When mobilizing reservists, the government often pays per-diem costs for housing reservists at hotels near their activated unit, increased transportation costs, and increased training costs when bringing together geographically dispersed individuals and units. This process can take months prior to deployment and a month or two following a deployment. Our metric is the number of USRF personnel utilized.

f. First Responders. All levels of government experience a loss of first responders, including local National Guard, police, firefighters, and paramedics, when reserve units mobilize. For example, forty-four percent of the nation’s police forces have one or more members deployed in support of the GWOT.<sup>191</sup> Because these first responders perform a public service as opposed to private services provided to paying customers, this impact is separated from

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<sup>190</sup> The Kimery Report. *Guard, Reserve Readiness at Home Continues to Deteriorate*. (7 August 2007).

<sup>191</sup> Bilmes, *The Economic Cost of the Iraq War*, 14.

private organizations. We measure this loss by the total number of first responders deployed from their normal jobs.

### **3. Reservists**

a. Civilian Wages. This is represented by the opportunity cost of using USRF and offset by the loss or gain in income when mobilized, depending on civilian profession. This is measured by the average civilian income, including losses or gains in income, experienced by all activated USRF.

b. Cost of Injuries. Injured reservists experience costs depending upon the extent of their injuries. These can be costly (such as severe head injuries, amputations, and other injuries resulting in being unable to return to duty). The impact of injuries is measured by the number of USRF injured and the type of injury they incur.

c. Potential Job Loss. Despite being protected by federal law (Uniformed Services Employment and Reemployment Rights Act of 1994), many reservists lose their job when they return from a deployment. Employers can sidestep protective laws by simply eliminating positions filled by vacant reservists. We measure the loss of job impact by the number of reservists who lose their previous job.

d. Cost to Self-Employed Businesses. Perhaps hardest hit, self-employed reservists often have no one to run their businesses when they are mobilized. For example, the Associated Press reported one self-employed agricultural business owner deployed for one year to Kuwait had to completely rebuild his business upon returning.<sup>192</sup> Our metric is the number of self-employed reservists who have deployed in support of the GWOT.

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<sup>192</sup> Andrew O. Selsky. *Long Deployments Pressure National Guard.* (WashingtonPost.com, 27 August 2007).

#### 4. Families

a. Levels of Child Abuse. Households of deployed reservists experience increased rates of child abuse by the remaining parent. A study conducted at the University of North Carolina reveals that “when deployments began, reports of abuse quickly jumped from 5 in 1,000 children to 10 in 1,000.”<sup>193</sup> Our metric is the number of child abuse cases within families with a member deployed in support of the GWOT.

b. Children’s Educational Test Scores. Children of deployed parents may have lower educational test scores than when both parents are home.<sup>194</sup> A recent U.S. Military Academy study by Rozlyn Engel et al., concludes that “evidence suggests that the adverse affects in academic achievement [as a result of deployments] may persist for several years.”<sup>195</sup> Our metric is the number of children of deployed reservists.

c. Depression. While families with deploying family members may experience increased depression, the families of reservists do not have established support networks that are typically available near major military installations. The U.S. Department of Veterans Administration published the “Iraq War Clinician Guide”, which states that, “active duty families often, but not always, live within the military communities where family and individual support and therapeutic services are more readily available in situations of deployment. Reserve or National Guard service members may be activated for deployment from civilian jobs in geographical locations that are remote from any military

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<sup>193</sup> Robert Davis and Gregg Zoroya. *Study: Child Abuse, Troop Deployment Linked* (USAToday.com, 7 May 2007).

<sup>194</sup> Mark C. Pisano. *Implications of Deployed and Nondeployed Fathers on Seventh Graders’ California Achievement Test Scores during a Military Crisis*. Paper presented at the Annual Meeting of the National Association of School Psychologists (Atlanta, GA, March 12-16, 1996).

<sup>195</sup> Rozlyn C. Engel et al., *Military Deployments and Children’s Academic Achievement: Evidence from Department of Defense Education Activity Schools*. U.S. Military Academy, Working Draft as of 20 December 2006. Discussed in Tracy Thompson. *Untested Waters: Challenges Facing an Operational Army Reserve*. (Carlisle Barracks, PA: Army War College, 2007), 16.

resources. In such situations, families can feel isolated and less supported.”<sup>196</sup> Our metric is the number of reserve family members suffering from depression during a deployment.

d. Divorce Rates. Deployments place additional strain on families. Because reservists have not traditionally planned to deploy for more than a month, they may experience increased divorce rates. Our metric is the divorce rate for returning service members.

e. Household Costs. Reserve families do not have government housing available and experience increased costs during deployments. Without both family members being available, these include daycare, landscapers, repairs, and deliveries. Dewan reports that reservist families are dealing with many additional costs while a family member is mobilized, including automobile repairs, household appliance breakdowns, broken storm windows, leaky bathtubs, and wind damaged roof repairs.<sup>197</sup> These costs, however, represent transfers and hence a net social cost of zero to American society. Our metric is increased household costs.

f. Spousal Earnings. With one parent deployed, adults in reserve families often cannot work as much and experience decreased income. Our metric is the number of spouses of deployed families who have to reduce or stop working.

g. Health Care Costs. Family members of deployed reservists tend to experience increased health care costs from the added stress of the deployment. These costs, however, represent transfers and hence a net social cost of zero to American society. Our metric is the increase in health care costs.

h. Family Disruption Costs. As reservists deploy, the family often experiences expensive disruptions. Some family members relocate to be closer

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<sup>196</sup> U.S. Department of Veterans Affairs, National Center for PTSD. *Iraq War Clinician Guide*, 83.

<sup>197</sup> Shaila Dewain. “State Taxpayers Providing Relief to Military Families.” (*The New York Times*: 8 March 2005).

to extended family. Others experience increased travel costs from visiting extended family for support throughout the deployment. These costs, however, represent transfers and hence a net social cost of zero to American society. Our metric is the cost per family attributed to disruption.

## **E. PREDICTING IMPACTS QUANTITATIVELY THROUGHOUT THE PROJECT LIFE**

Now that each of the relevant impacts has been identified with their respective measurement indicators, we must consider the impact throughout the life of the GWOT, defined within our *ex post* analysis as the post-9/11 period from 2001 – 2006..

### **1. Employers**

a. Lost Business Productivity. Jeffrey Gangemi identifies 371 applications to the Small Business Administration for Military Reservist Economic Injury Disaster Loans (MREIDL) as of January 2007.<sup>198</sup> Given the fact that many small business owners may not be aware of the MREIDL, many may not have submitted applications for it. We therefore estimate (conservatively) that 371 businesses have experienced substantial losses as a result of reservist mobilization from 2001 to 2006.

b. Hiring Temporary Labor. A Braun Consulting report cites an April 2003 survey by the Society for Human Resource Management in which about half of the 320 respondents claimed to have hired temporary replacement workers to fill vacancies left by activated reservists. We deduct 9 percent of self-employed activated reservists (Thompson, 2007), leaving 375,115 total activations. We accordingly estimate that businesses have hired temporary workers to fill 30 percent of all positions vacated by activated reservists, or

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<sup>198</sup> Jeffrey Gangemi. "The War's Toll on Reservist-Entrepreneurs." (BusinessWeek: 30 January 2007).

112,535. We consider the remaining job vacancies to be full-time students or that the employers choose to assign additional work to remaining staff.

c. Additional Workload on Remaining Staff. As an alternative to hiring temporary labor to backfill vacant positions, we calculate the additional stress placed on remaining staff to affect 60 percent of the non-self employed workforce that has been mobilized, or 225,069 total affected from 2001 to 2006.

d. Paying Salaries for Deployed Employees. The Reserve Officers Association (ROA) based in Washington, D.C. has conducted annual surveys of *Fortune's* top 500 corporations asking about pay and benefits provided to their deployed reservists. From the ROA's 2006 survey, about 31 percent (156) of the *Fortune* 500 companies pay full or differential salaries of their activated reservists.<sup>199</sup> Applying this percentage to the non-self employed activated reserve population determined by Thompson (2007) to be 91 percent of the 412,215 we estimate that 116,285 reservists received full or differential pay from their civilian employers while they are deployed.

e. Re-training Returning Employees. Thompson argues that "a full third of the reserve components are made up of professionals and managers" and that "less than 20 percent of the reserve force" is made up of the "lowest skilled category of the labor pool" who wouldn't need retraining.<sup>200</sup> We estimate that half of the 375,115 activated reservists who are not self-employed will be trained when returning to their job following a mobilization, for a total of 187,558.

f. Reduced Innovation. While it seems clear that businesses would experience a reduction in innovation when they lose critical employees to reserve activations, we are unable to estimate the impact due to a lack of available information.

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<sup>199</sup> Carol A. Kelly. "Fortune 500: ROA Survey Shows that More of America's Corporate Leaders are Improving Financial Support of their Citizen Warrior Employees," (Reserve Officer's Association: Washington, D.C., 2006).

<sup>200</sup> Thompson. *Untested Waters*, 4.



## 2. Government

a. Fatality Rates for Reservists. Reservists have suffered 788 hostile/non-hostile killed in action (KIA).<sup>201</sup> Of the total number deployed over this period of time, the KIA rate for Reservists is 0.19%.

b. Increased Recruiting Costs. From 2001 to 2006 we estimate that Total Force requirements for new recruits is 181,000 per year.<sup>202</sup> The reserve component requires 44 percent—a total of 79,640 new recruits annually. Therefore, over the course of this analysis, 398,200 recruits were required.

c. Increased Retention Costs. We estimate that the average annual total of re-enlistment bonuses paid by DoD is \$602,000,000<sup>203</sup>. Of this amount, we estimate that 44 percent applies to the reserve component.

d. Paying for Remote Mental Health Treatment. Testimony by CBO Deputy Assistant Director for National Security, Matthew Goldberg identified that “the incidence rate of PTSD [Post Traumatic Stress Disorder] is 17 percent.”<sup>204</sup> Using 412,215 reservists returning from deployments in support of the GWOT, we estimate that 70,077 will seek mental health treatment.

e. Mobilization Costs. Mobilization costs from 2001 to 2006 are proportional to the number of Reservists mobilized, since these costs are incurred for all USRF when mobilized and demobilized. Therefore, the total 412,215 of USRF deployed serves as our metric.

f. Loss of First Responders. An August 2007 Kimery Report stated that the Massachusetts state Executive Office of Public Safety identified 30 of

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<sup>201</sup> Defense Manpower Data Center, *Personnel & Procurement Reports and Data Files*.

<sup>202</sup> Office of Management and Budget. *Department of Defense Recruiting Assessment* (at ExpectMore.gov, 13 August 2007).

<sup>203</sup> Associated Press. *Iraq GI Retention Efforts May Bring Longer Tours, Better Pay* (CNN: 11 April 2007).

<sup>204</sup> Congressional Budget Office. *Projecting the Costs to Care for Veterans of U.S. Military Operations in Iraq and Afghanistan*, statement by Matthew S. Goldberg, Deputy Assistant Director for National Security. (Washington, D.C., 17 October 2007), 10.

190 deployed public safety members worked in law enforcement or other emergency services.<sup>205</sup> From this report, we estimate that 16 percent of all deployed reservists are first responders, totaling 65,954 first responders deployed.

### **3. Reservists**

a. Lost Civilian Wages. Bilmes and Stiglitz describe a loss of civilian wages when reservists are activated.<sup>206</sup> However, contrary to anecdotal stories that have appeared in many newspapers over the past few years, Loughran et al., estimate that activated reservists actually experience a net gain in income on average. According to their study, while 17% of USRF do experience some net income loss, this is exceeded by the number that gain.<sup>207</sup> The gain that USRF experience in income must be used to offset the opportunity cost to Society in general of the Reservists mobilization as represented by their lost civilian wages.

b. Cost of Injuries. Reservists have suffered 6,253 wounded in action (WIA).<sup>208</sup> Of the total number deployed over this period of time, the WIA rate for Reservists is 1.52%. The percent wounded that suffered a severe head injury is 20%; amputations are 6%; injuries with non-return to duty are 24%; and injuries with return to duty are 50%.<sup>209</sup>

c. Loss of Job. Since the Department of Justice was given authority over USERRA in 2004, it has brought 16 USERRA complaints to court, resolving 13 and has filed the first ever USERRA federal class action lawsuit.<sup>210</sup> From 2001 to 2006, we use the 16 reservists that have filed for USERRA protection as our metric.

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<sup>205</sup> The Kimery Report, *Guard, Reserve Readiness at Home Continues to Deteriorate*.

<sup>206</sup> Bilmes, *The Economic Cost of the Iraq War*, 14.

<sup>207</sup> Loughran, *Activation and the Earnings of Reservists*, xvii.

<sup>208</sup> Defense Manpower Data Center, *Personnel & Procurement Reports and Data Files*.

<sup>209</sup> Wallsten, *The Economic Cost of the War in Iraq*, 12.

<sup>210</sup> *North Country Gazette*, "DOJ Sues Florida Court Clerk for Military Reservist," 16 October 2007.

d. Self-Employed Business Losses. Based upon Thompson's analysis of reserve component civilian employment, 9 percent of USRF are self-employed.<sup>211</sup> From 2001 to 2006, 412,215 reservists have deployed in support of the GWOT. We estimate that 37,099 of them are self-employed.

#### **4. Families**

a. Increased Levels of Child Abuse. Based upon figures within the Status of Forces Surveys cited by Thompson (2007), 53 percent of reservists have children.<sup>212</sup> We base our estimate of the total number of abused children upon the recorded child abuse rates increasing from 5 in 1,000 to 10 in 1,000. We estimate that 218,473 reservists who have deployed in support of the GWOT have at least one child. Conservatively, we calculate that 1,092 more children suffer some form of child abuse as a result of deployments.

b. Decreased Children's Educational Test Scores. We estimate that 218,473 reservists who have deployed in support of the GWOT have at least one child.

c. Increased Depression. We cannot estimate the impact of increased depression levels within deployed reserve families. We cannot estimate the number of family members suffering from increased depression during a deployment.

d. Increased Divorce Rates. Army figures report an 84 percent increase in divorce rates for deployed families.<sup>213</sup>

e. Increased Household Costs. We calculate this amount by multiplying the total number of reservists deployed in support of GWOT by the average increase in household costs.

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<sup>211</sup> Thompson, *Untested Waters*, 5.

<sup>212</sup> *Ibid.*, 28.

<sup>213</sup> Gregg Zoroya. *Soldiers' Divorce Rates Up Sharply*. (USAToday.com: 7 June 2005). As Zoroya quotes Army officials "The stress of combat, long separations, and difficulty readjusting to family life are key reasons for the surge [in divorce rates]."

f. Decreased Spousal Earnings. Thompson (2007) identifies that 56 percent of all USRF are married based on the 2005 Status of Forces Survey of reserve component members.<sup>214</sup> Based upon this number 230,840 reservists are married during the 2001 to 2006 time frame, and of those that are married, 60% of spouses are employed, according to a National Military Family Association survey.<sup>215</sup> However, we cannot estimate the number of spouses who have to reduce or stop working as a result of a deployment in support of the GWOT.

g. Increased Health Care Costs. Increased health care costs are recognized but not specified.

h. Family Disruption Costs. Other potential costs of disruption are recognized but not specified.

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<sup>214</sup> Thompson, *Untested Waters*, 27.

<sup>215</sup> National Military Family Association, *Cycles of Deployment; An Analysis of Military Family Support from April through September 2005*, 13.

**Table 2. Detailed Impacts of Employing the Reserves and National Guard**

<b>Employers</b>
Lost Business Productivity
Hiring Temporary Labor
Additional Workload Placed on Remaining Staff
Paying Salaries for Deployed Employees
Re-Training Returning Employees
Reduced Innovation
<b>Government</b>
Fatality Rates of Reserve Service Members
Increased Recruiting Costs
Increased Retention Costs
Paying for Remote Mental Health Treatment
Mobilization Costs
Loss of First Responders
<b>Reservists</b>
Lost Civilian Wages
Cost of Injuries
Loss of Job
Self-Employed Business Losses
<b>Families</b>
Increased Levels of Child Abuse
Decreased Children's Educational Test Scores
Increased Depression
Increased Divorce Rates
Increased Household Costs
Decreased Spousal Earnings
Increased Health Care Costs
Family Disruption Costs

## **F. MONETIZATION OF ALL IMPACTS**

### **1. Employers**

a. Lost Business Productivity. The Small Business Administration has awarded MREIDL loans that average \$90,844. Multiplied by the 371 total businesses affected by reservist activations, we estimate the total monetized impact of business productivity loss as \$33,703,124.

b. Hiring Temporary Labor. Senate Bill 1595, introduced in September 2003 recommended a tax credit to employers of \$6,000 per worker

hired to temporarily replace activated reservists. This credit was intended to offset the cost of hiring and training the temporary worker. We use this figure and multiply it by the estimated number of replacement workers hired for a total of \$675,210,000 cost to employers to hire temporary replacement labor.

c. Additional Workload on Remaining Staff. Extrapolating from information provided in Loughran et al.'s study, we estimate that the cost of placing additional workload on remaining employees is \$6,000 per activated reservist. This cost represents additional overtime that remaining employees must work to make up for the loss of a reservist, as well as the increased stress of the workload, or the cost to the employer for simply setting aside the workload. We estimate that the total cost of workload placed on remaining staff of 225,069 is \$1,350,414,000.

d. Paying Salaries for Deployed Employees. Based upon Loughran et al.'s study of earning losses among activated reservists, we estimate that average compensation by employers is \$6,000 per reservist. Multiplied by 187,558 reservists who are estimated to have received differential pay, we estimate businesses have paid \$744,224,000 to their reserve employees while they have been activated. These costs, however, represent transfers and hence a net social cost of zero to American society.

e. Re-training Returning Employees. We base the cost of retraining returning employees as one quarter the cost of training temporary replacement labor, or \$1,500 for each of the estimated 187,558 activated reservists who would be trained when returning to their job, totaling \$281,337,000.

f. Reduced Innovation. Not estimated. Due to a lack of information, we are unable to monetize the impact of reduced innovation.

## **2. Government**

a. Fatality Rates for Reservists. Wallsten and Kosec calculate the cost of each KIA according to an economic metric known as the Value of a

Statistical Life (VSL). The VSL represents a willingness to pay for reducing the risk of death and is calculated at \$6.5 million per individual.<sup>216</sup> Multiplied by the number of USRF KIA, this impact is monetized at \$5,122,000,000.

b. Increased Recruiting Costs. The DoD Recruiting Assessment identifies the annual cost of recruiting new military personnel in 2000 as \$10,500. The average cost of recruiting new military personnel has increased to \$15,286<sup>217</sup>, we therefore estimate the increased recruiting cost as \$4,786 per person. Multiplying this increased cost by the proportion of reservists required to meet recruiting goals over the course of 2001 to 2006 of 398,200 personnel, we estimate the total cost to be \$1,905,785,200.

c. Increased Retention Costs. Given that 44 percent of all DoD re-enlistment bonuses are estimated to be paid to the reserve component, we calculate the total impact over the 2001 to 2006 time period to meet reserve retention goals as \$1,324,400,000.

d. Paying for Mental Health Treatment. In her 2007 working paper, Bilmes argues that “the average annual cost of treating veterans in the [VA] system is now \$5,000”.<sup>218</sup> Using this as an average cost for providing mental health treatment for demobilized reservists yields a total cost of \$350,385,000.

e. Mobilization Costs. Bilmes and Stiglitz calculate mobilization costs at \$100,000 per military personnel, which includes both mobilization and demobilization.<sup>219</sup> Multiplied by the number of USRF, our mobilization costs are calculated at \$41,221,500,000.

f. Loss of First Responders. Senator Chuck Schumer's U.S. Senate press release describes how New York state police and sheriffs departments are

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<sup>216</sup> Wallsten, *The Economic Cost of the War in Iraq*, 9.

<sup>217</sup> OMB, *DoD Recruiting Assessment*.

<sup>218</sup> Linda Bilmes. “Soldiers Returning from Iraq and Afghanistan: The Long-term Costs of Providing Veterans Medical Care and Disability Benefits.” (Cambridge, MA: Harvard University, Faculty Research Working Paper, January 2007).

<sup>219</sup> Bilmes, *The Economic Cost of the Iraq War*, 10.

paying about \$1 million per year “in overtime expenses to pay officers covering for deployed reservists.”<sup>220</sup> He explains that, “a reservist call-up is expensive for local public safety departments because they often pay the salaries and benefits of reservists while the reservists are deployed.”<sup>221</sup> Given our earlier estimate of 65,954 first responders, we estimate on average 1,319 first responders among each of the 50 states. We estimate that this amount representing the law enforcement community represents approximately 50 percent of first responders, with the other 50 percent comprised of such personnel as firefighters and paramedics. Extrapolating from the amount provided by New York State of \$1 million annually or \$5 million from 2001 – 2006, we multiply by two to capture the costs of the other first responders and then by 50 states for a total cost of \$500,000,000.

### **3. Reservists**

a. Lost Civilian Wages. Despite Loughran et al.’s estimate that the net gain in income achieved by USRF is \$11,165 per individual on average, we conservatively choose to apply the amount of lost civilian wages identified by Bilmes and Stiglitz as \$46,000 per individual.<sup>222</sup> Multiplying by 412,215, the total number of USRF deployed, yields a total net loss of \$18,961,890,000.

b. Cost of Injuries. Wallsten and Kosec calculate the cost of each WIA according to an economic metric known as the Value of a Statistical Injury (VSI). The VSI represents a willingness to pay for reducing the risk of certain types of injury and is calculated at different rates depending on the type of injury. Severe head traumas have a VSI of \$3.4 million; amputations are \$880,000 thousand; injuries with non-return to duty are \$260,000; and injuries with return to

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<sup>220</sup> Charles Schumer. “Schumer: Reservist Call-Up Taking Drove of New York Cops off the Streets; Costing Local Police Departments Millions.” (United States Senate: Press Release, 24 September 2003).

<sup>221</sup> Ibid.

<sup>222</sup> Bilmes, *The Economic Cost of the Iraq War*, 14.



duty are \$60,000.<sup>223</sup> Multiplied by the number of USRF WIA by the type of injury, this impact is monetized at \$5,161,220,000.

c. Loss of Job. A U.S. District Court in Ohio awarded a USERRA plaintiff \$33,925.16 in damages and fined Pepsiamericas an additional \$50,000 in punitive damages as well as all attorney's fees and litigation expenses in *Koehler v. Pepsiamericas*, 18 July 2006.<sup>224</sup> Employing this damages award of \$33,925 as representative of the 16 cases brought to court, we conservatively compute a total national impact of \$542,800.

d. Self-Employed Business Losses. Using the Small Business Administration's estimates of the income of self-employed individuals, we estimate that the average self-employed income is \$62,500.<sup>225</sup> Multiplying this figure by 37,099—the total number of self-employed business owners who have deployed in support of the GWOT, we estimate that the total cost of self-employed business losses to be \$2,318,687,500.

#### **4. Families**

a. Increased Levels of Child Abuse. Not estimated. We cannot estimate the total monetary impact of increased levels of child abuse cases as a result of reserve mobilizations because we cannot monetize the impact of an abused child.

b. Decreased Children's Educational Test Scores. Not estimated. We do not estimate this impact because we cannot monetize the impact of decreased children's educational test scores resulting from deployed reservists.

c. Increased Depression. Not estimated. We cannot estimate the monetized impact of increased depression levels because we cannot monetize

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<sup>223</sup> Wallsten, *The Economic Cost of the War in Iraq*, 12.

<sup>224</sup> Samuel F. Wright. "Willful USERRA Violation: Judge Determines Company's Denial of Wrongdoing is not Credible." *Law Review* 0713, Reserve Officer's Association, March 2007.

<sup>225</sup> U.S. Small Business Administration, Office of Advocacy. *Characteristics of Business Owners and Non-Owners*, 1998, 3.

the wide-ranging effect of increased depression in reserve families during deployments.

d. Increased Divorce Rates. Not estimated. We do not estimate this impact because we cannot monetize the effect of increased divorce rates among reserve families.

e. Increased Household Costs. Dewan identifies that many states are providing grants to taxpayers. For example, Illinois offers grants of \$500 to \$2,500 to families of reservists who have been deployed since 11 September 2001 regardless of whether the family has experienced a loss of income or not.<sup>226</sup> Taking \$500 as an average increase in household costs, multiplied by 412,215: the number of reservists deployed in support of the GWOT we establish a total of \$206,107,500. These costs, however, represent transfers and hence a net social cost of zero to American society.

f. Decreased Spousal Earnings. Not estimated. We cannot estimate this impact because we cannot monetize the effect of decreased spousal earnings.

g. Increased Health Care Costs. Not estimated. Due to a lack of information, we are unable to monetize the impact of increased health care. However, these costs represent transfers and hence a net social cost of zero to American society.

h. Family Disruption Costs. Not estimated. Due to a lack of information, we are unable to monetize the impact of family disruption. However, these costs represent transfers and hence a net social cost of zero to American society.

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<sup>226</sup> Dewan, "State Taxpayers Providing Relief to Military Families."

**Table 3. Monetized Impacts of Alternative One**

Impact area	Monetized Impact
<b>Employers</b>	
Lost Business Productivity	\$ 33,703,124
Hiring Temporary Labor	\$ 675,210,000
Additional Workload Placed on Remaining Staff	\$ 1,350,414,000
Paying Salaries for Deployed Employees	\$ 744,224,000
Re-Training Returning Employees	\$ 281,337,000
Reduced Innovation	n.e.
<b>Government</b>	
Fatality Rates of Reserve Service Members	\$ 5,122,000,000
Increased Recruiting Costs	\$ 1,905,785,200
Increased Retention Costs	\$ 1,324,400,000
Paying for Remote Mental Health Treatment	\$ 350,385,000
Mobilization Costs	\$ 41,221,500,000
Loss of First Responders	\$ 500,000,000
<b>Reservists</b>	
Lost Civilian Wages	\$ 18,961,890,000
Cost of Injuries	\$ 5,161,220,000
Loss of Job	\$ 542,800
Self-Employed Business Losses	\$ 2,318,687,500
<b>Families</b>	
Increased Levels of Child Abuse	n.e.
Decreased Children's Educational Test Scores	n.e.
Increased Depression Levels	n.e.
Increased Divorce Rates	n.e.
Increased Household Costs	\$ 206,107,500
Decreased Spousal Earnings	n.e.
Increased Health Care Costs	n.e.
Family Disruption Costs	n.e.
n.e.= not estimated	

**G. ASSESSING THE IMPACTS ON THE COUNTERFACTUAL**

Our counterfactual Alternative Two represents a policy of increasing the Active-Duty force by an amount of personnel equal to that employed by the USRF in Alternative One, while maintaining the USRF strictly as a strategic reserve. Hence, the 412,215 USRF would be added to the Active-Duty Force, with all other considerations between the two alternatives remain equal. In doing so, a number of identified impacts from Alternative One are no longer applicable,

since the Reserve Force assumes only full-time Active-Duty personnel are employed and their families largely have access to military bases and the support services they offer. As a result, the social cost is mitigated, although we assume the budgetary costs are equal; as specified in Alternative One, the budgetary cost and effectiveness of a deployed military personnel, whether from the Reserve Component or Active Component, are the same.

## **1. Employers**

All six impacts affecting employers that have been identified under Alternative One are no longer applicable under Alternative Two. Since all Active-Duty personnel are considered full-time military employees, there are no longer any impacts on civilian employers. Removing reservists from the force employment policy returns the employment market to the more traditional model of individuals choosing active duty military service or civilian employment.

## **2. Government**

Four of the six government impacts under Alternative One still have direct relevance to Alternative Two. Paying for remote mental health treatment and a loss of first responders, however, are no longer applicable under an all Active-Duty alternative.

a. Fatality Rates for Active-Duty Service members. This impact recognizes Active-Duty personnel who die in support of the GWOT. It is measured by the number of Active-Duty who suffer GWOT related fatalities. Although Active-Duty personnel have suffered a KIA rate of 0.33% during this time, we cannot say that there is necessarily a greater likelihood of Active-Duty personnel being killed than Reserve Forces. They may, for example, be employed operationally in a way to make their risk of death more likely, or certain higher-risk specialties, such as infantry, may be found in the Active-Duty Force. Given the fatality risk, we calculate that, as a percentage of the total Active-Duty Force employed over the 2001 – 2006 period, 1,360 personnel are classified as

hostile/non-hostile killed in action (KIA).<sup>227</sup> Using the VSL of \$6.5 million and multiplying by the number of KIA, we estimate the monetized impact as \$8,840,000,000.

b. Increased Recruiting and Retention Costs. Given that recruiting and retention efforts have largely targeted both Active-Duty and Reserve personnel in a similar fashion throughout the period of analysis, the costs associated with Alternative One to the 44% of the Total Force comprised of Reservists is assumed to have been directed to maintaining a 100% Active-Duty Force. As such, we similarly estimate the total increase in recruiting costs to be \$1,905,785,200 and the increase in retention costs to be \$1,324,400,000.

c. Mobilization Costs. While there are some additional costs to deploying and redeploying individual personnel, this represents a fraction of the costs of doing so with USRF through formal mobilization and demobilization. We therefore estimate the expense at 10% of the costs identified under Alternative One, for a monetized impact of \$4,122,150,000.

### **3. Active-Duty Service Members**

Only one of the four impacts identified to affect service members under Alternative One still have direct relevance to Alternative Two. Lost civilian wages, loss of job, and self-employed business losses are no longer applicable under an all Active-Duty alternative.

a. Cost of Injuries. This impact recognizes Active-Duty personnel who are wounded in support of the GWOT. It is measured by the number of Active-Duty who suffer GWOT related non-fatal injuries. Although Active-Duty personnel have suffered a WIA rate of 2.25% during this time, we cannot say that there is necessarily a greater likelihood of Active-Duty personnel

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<sup>227</sup> Defense Manpower Data Center, *Personnel & Procurement Reports and Data Files*. The actual number of Active-Duty KIA during this time frame was 3,444 out of a total Active-Duty force employed of 1,044,939, yielding the KIA rate of 0.33%, almost 75% greater than that of Reservists.

being injured than Reserve Forces, in a similar manner to the relationship posited for KIA rates. As with those KIA, Active-Duty personnel may be employed operationally in a way to make their risk of injury more likely, or certain higher-risk specialties, such as infantry, may be found in the Active-Duty Force and hence increase the rate of injury. Given the risk of injury, we calculate that, as a percentage of the total Active-Duty Force employed over the 2001 – 2006 period, 9,274 personnel are classified as hostile/non-hostile wounded in action (WIA).<sup>228</sup> Using the VSI breakout and multiplying by the number of WIA, we estimate the monetized impact as \$13,083,200,000.

#### **4. Families**

All eight impacts identified to service members under Alternative One have direct relevance to Alternative Two. To varying degrees, Active-Duty personnel deploying in support of the GWOT place a tremendous burden upon their families. In many respects, the average costs to families of Active-Duty personnel is estimated to be lower compared to USRF families, due to their proximity to major military bases and the support network and facilities such installations provide. Nevertheless, while recognizing that these impacts are nearly universal among families of deployed service members, we also are unable to provide a detailed quantification or monetization of the costs beyond those already explored in Alternative One. The only quantified impact from Alternative One, increased household costs, is estimated to be approximately 50% of the costs to Reservists, given access to commissaries, on-base housing, and other forms of subsidized assistance. As such, the total impact is estimated at \$103,053,750.

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<sup>228</sup> Defense Manpower Data Center, *Personnel & Procurement Reports and Data Files*. The actual number of Active-Duty WIA during this time frame was 23,507 out of a total Active-Duty force employed of 1,044,939, yielding the WIA rate of 2.25%, almost 48% greater than that of Reservists. The amount presented in the counterfactual represents the proportional increase in WIA, and not the total cost of all WIA under this alternative.

**Table 4. Monetized Impacts of Alternative Two**

Impact area	Monetized Impact
<b>Employers</b>	
Lost Business Productivity	n.a.
Hiring Temporary Labor	n.a.
Additional Workload Placed on Remaining Staff	n.a.
Paying Salaries for Deployed Employees	n.a.
Re-Training Returning Employees	n.a.
Reduced Innovation	n.a.
<b>Government</b>	
Fatality Rates of Active-Duty Service Members	\$ 8,840,000,000
Increased Recruiting Costs	\$ 1,905,785,200
Increased Retention Costs	\$ 1,324,400,000
Paying for Remote Mental Health Treatment	n.a.
Mobilization Costs	\$ 4,122,150,000
Loss of First Responders	n.a.
<b>Active-Duty Service members</b>	
Lost Civilian Wages	n.a.
Cost of Injuries	\$ 13,083,200,000
Loss of Job	n.a.
Self-Employed Business Losses	n.a.
<b>Families</b>	
Increased Levels of Child Abuse	n.e.
Decreased Children's Educational Test Scores	n.e.
Increased Depression Levels	n.e.
Increased Divorce Rates	n.e.
Increased Household Costs	\$ 103,053,750
Decreased Spousal Earnings	n.e.
Increased Health Care Costs	n.e.
Family Disruption Costs	n.e.
n.a.= not applicable    n.e.= not estimated	

## H. SUMMARY OF RESULTS

Our analysis has revealed that the costs of Alternative One throughout the 2001 to 2006 time period exceed Alternative Two by \$49,931,539,424. Figure 9 presents the total impacts on American society for both alternatives, specified for both quantitative and nonquantitative social costs. The budgetary costs are calculated to reflect the proportional amount of using the 412,215 personnel (approximately 28% of the Total Force employed) either as USRF in Alternative One or as Active Duty personnel in Alternative Two based on CBO estimates. In

both cases, we assume that the budgetary costs are equal, even though the Administration may have believed that the budgetary costs associated with Alternative Two exceeded those of Alternative One. Economic costs for the other 72% of the Total Force are not analyzed since they are the same Active-Duty forces under each alternative. However, based on this cost-benefit analysis, it is clear that Reserve Force utilization in support of the GWOT as an operational force is much more expensive than increasing the Active Duty force while maintaining the USRF as a strategic reserve when an analysis of total economic costs is undertaken.

The largest social costs are mobilization costs and lost civilian wages. Most other impacts amount to hundreds of millions, if not several billion, dollars. In some cases, impacts represent transfers within American society, such as in paying salaries of deployed employees and increased household costs, and such impacts yield a net social cost of zero. The difference in social costs between both alternatives is significant enough to demonstrate that Reserve utilization represents a 172 percent cost premium in social costs and a 28 percent cost premium in total economic cost when budget costs are included. These ratios are calculated by dividing the amount (whether social cost or total economic cost) in Alternative One by Alternative Two. In either calculation, the impact is significant to American society.

As discussed in our methodology chapter, there are a number of errors that plague any cost-benefit analysis, and this analysis is no exception. Potential errors in our analysis include: omission, forecasting, measurement, and valuation errors. These errors can have profound impacts on the results of CBA.

While we have mitigated these errors, they are difficult to completely dismiss. We have attempted to provide a comprehensive list of social cost impacts, but we may have excluded other significant impacts. We limited potential forecasting errors by employing an *ex post* CBA. Measurement errors may present a significant source of error in our analysis. Our numbers are offered for comparison only.



## **I. CONCLUSION**

In this chapter, we focused on developing a cost-benefit analysis as we had outlined in our methodology. We specified two primary alternatives, determined who had standing, and then determined the impacts of the policy alternatives—quantitatively and qualitatively—as necessary over the period of analysis. Monetization of impacts facilitated a comparison of both alternatives and we concluded that the social costs of Alternative One exceeded those of Alternative Two. As such, we posit that the policy of employing the U.S. military Reserve Forces as an operational force from 2001 to 2006 has not been more cost effective than the counterfactual alternative of increasing active duty end strength to meet the manpower requirements of fighting the Global War on Terrorism while keeping the Reserve Forces as a strategic force in readiness.

**Figure 9. GWOT Reserve Force Utilization Cost-Benefit Analysis<sup>229</sup>**

<i>GWOT Reserve Utilization CBA</i>		
	<u>Perspective of American Society (\$2006 )</u>	
	Alternative One	Alternative Two
	Operational Reserve Force	Strategic Reserve Force
<b><i>Policy Costs:</i></b>		
<b><i>Quantified Social Costs</i></b>		
Lost Business Productivity	\$ 33,703,124	n.a.
Hiring Temporary Labor	\$ 675,210,000	n.a.
Additional Workload Placed on Remaining Staff	\$ 1,350,414,000	n.a.
Paying Salaries for Deployed Employees*	\$ 0	n.a.
Re-Training Returning Employees	\$ 281,337,000	n.a.
Fatality Rates of Service Members	\$ 5,122,000,000	\$ 8,840,000,000
Increased Recruiting Costs	\$ 1,905,785,200	\$ 1,905,785,200
Increased Retention Costs	\$ 1,324,400,000	\$ 1,324,400,000
Paying for Remote Mental Health Treatment	\$ 350,385,000	n.a.
Mobilization Costs	\$ 41,221,500,000	\$ 4,122,150,000
Loss of First Responders	\$ 500,000,000	n.a.
Lost Civilian Wages	\$ 18,961,890,000	n.a.
Cost of Injuries	\$ 5,161,220,000	\$ 13,083,200,000
Loss of Job	\$ 542,800	n.a.
Self-Employed Business Losses	\$ 2,318,687,500	n.a.
Increased Household Costs*	\$ 0	\$ 0
<b><i>Unquantified Social Costs</i></b>		
Reduced Innovation	n.e.	n.e.
Increased Levels of Child Abuse	n.e.	n.e.
Decreased Children's Educational Test Scores	n.e.	n.e.
Increased Depression Levels	n.e.	n.e.
Increased Divorce Rates	n.e.	n.e.
Decreased Spousal Earnings	n.e.	n.e.
Increased Health Care Costs*	n.e.	n.e.
Family Disruption Costs*	n.e.	n.e.
<b><i>Total Social Costs</i></b>	<b>\$ 79,207,074,624</b>	<b>\$ 29,275,535,200</b>
<b><i>Total Budgetary Costs</i></b>	<b>\$ 149,240,000,000</b>	<b>\$ 149,240,000,000</b>
<b><i>Total Economic Costs</i></b>	<b>\$ 228,447,074,624</b>	<b>\$ 178,515,535,200</b>
n.a.= not applicable n.e.= not estimated * = transfer		

<sup>229</sup> This chart is inspired by the CBA accounting work sheet presented in Sassone and Schaffer, *Cost-Benefit Analysis*, 172. Within their work sheet, the delineate between the benefits and costs of monetized and non-monetized effects. As they emphasize, their worksheet is meant primarily as a heuristic device and that the general goal of any summary is that it should be "clear, succinct, complete, and understandable." We agree with their concluding point that "a cost-benefit analysis is useful only when it is accessible."

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## **V. SUMMARY AND CONCLUSION**

### **A. SUMMARY**

This project developed a model that can shed light on our primary question: is the current policy of employing the U.S. military Reserve Forces as an operational force more cost effective than the alternative of increasing active-duty end strength to meet the manpower requirements of the Global War on Terrorism while keeping the Reserve Forces as a strategic force in readiness? We have estimated that employing the USRF as an operational force incurred social costs \$50 billion more than increasing the Active Duty component to meet force requirements over the 2001 to 2006 GWOT project life—or nearly \$10 billion per year.

We have also considered the following secondary questions:

#### **1. What is the Current Total Force Structure (Alternative 1)?**

The first (status quo) policy alternative is employing the USRF as an operational force in fighting the GWOT. Today's policy selects and employs USRF to execute missions, as well as augmenting and reinforcing the active component. Reserves currently comprise 44 percent of the Total Force, and deployed a total of over 60 million duty-days in 2004 (over 28% of all U.S. forces deployed to Iraq and Afghanistan).

#### **2. What would the Total Force Structure be if Reserve Forces were kept as a Supporting Reserve (Alternative 2)?**

We estimate that the active component would have increased by 412,215 man-years in order to meet in-theater GWOT personnel demands from 2001 to 2006 if USRF were not employed actively. This represents an in-theater annual personnel average of 82,443 man-years.

### **3. What are the Budgetary Costs Associated with the Alternatives?**

Considerable effort has been put into estimating the budgetary costs of the GWOT. However, it is difficult to calculate these costs because they are found as both regularly appropriated defense funds and as supplemental budget allocations. We accept Robert Sunshine's estimate of \$602 billion in direct war budgetary costs and specifically, \$533 billion for military operations; we then equally apportion to each alternative based on a proportional basis of the Total Force employed in fighting the GWOT. As Reserve Utilization from 2001 – 2006 averaged 28 percent, we estimate this amount to be approximately \$149 billion. This figure represents the direct budgetary cost to taxpayers for the Congressionally appropriated amount of funds to support GWOT operations, including funds for military personnel, operations and maintenance, and procurement.

### **4. What are the Non-Budgetary Social Costs Associated with the Alternatives?**

We have identified 24 social cost impacts associated with USRF employment. As shown in Figure 9, the total non-budgetary social costs associated with Alternative 1 is about \$79 billion. The total non-budgetary social costs associated with Alternative 2 is about \$29 billion. Current policy (Alternative 1) represents a 28 percent cost increase in total economic cost; the impact is significant to American society.<sup>230</sup>

### **5. What Social Costs are Mainly Transfers?**

In some cases, impacts represent transfers within American society, such as paying salaries of deployed employees and increased household costs; such

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<sup>230</sup> The 28 percent increase in total economic cost is calculated by dividing the total economic cost of Alternative 1 (\$228 billion) by the total economic cost of Alternative 2 (\$178 billion). Amounts correspond to the percent of reserve utilization in Alternative 1 and an equal amount for increasing Active Duty forces in Alternative 2. We discuss these figures in detail in the GWOT Reserve Force Utilization CBA in Figure 9.

impacts have a net social cost of zero. While it may be argued that transfers are not social costs because of the zero net value, we feel the social impacts are important to identify and include in the calculus. Furthermore, whether or not transfers are included in the overall calculation of social costs, the difference in social costs between the alternatives is significant.

## **B. SIGNIFICANT ISSUES FOR FURTHER STUDY**

Our study raises a number of significant issues for further study.

First, as Loughran points out, “future research should consider what kind of compensation reforms are likely to be most cost-effective in attracting and retaining reservists in an era in which the probability of activation is substantially above historical norms.”<sup>231</sup> Accompanied by the efficiency arguments of conscription versus all-volunteer force sustainment, it will be important to understand the costs associated with sustaining an all-volunteer reserve component given its employment methods.

Second, many social costs associated with employing either the reserve or active components are not clearly understood. Future study of the costs of deployed military members would be helpful to understand the true costs of employing the military. The costs that society bears for increased divorce rates, increased child abuse, lower educational test scores, reduced business innovation, increased depression levels, lower spousal earnings, increased family health care costs, and family disruption costs resulting from deployments are not fully understood by policy makers, yet these costs may have significant affects on society as a result of policy decisions.

Third, the impact of losing first responders is not well defined. It is clear that state and local governments bear costs for deployed first responders through overtime salaries for remaining staff and continued salary payments for those deployed. But additional costs may be borne during natural disasters such as

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<sup>231</sup> Loughran, “Activation and the Earnings of Reservists”, 74.

Hurricane Katrina and wild fires in Southern California. Additional contractor support may be necessary to deal with such disasters when first government agency first responders are not available. These contracts may drive up disaster relief bills significantly.

Fourth, we made specific assumptions limiting the scope of our analysis. Expanding the alternatives considered both spatially and temporally would provide useful material for further research. It would be interesting to consider other levels of force structure, to obtain better data on specific impacts, to consider a longer time period, and to gain a higher degree of granularity. Sensitivity analysis along any of these dimensions would further enrich understanding of the costs of reserve utilization in fighting the GWOT.

## **C. CONCLUSION**

It appears that a good CBA could inform defense personnel policy for the GWOT. Our *ex post* results may provide *ex ante* support for policy makers. Furthermore, developing and implementing a model such as ours may improve organizational learning and memory regarding alternative force structures and their social costs.

In its Second Report to Congress on 1 March 2007, the Commission on the National Guard and Reserves stated that “the current posture and utilization of the National Guard and Reserve as an ‘operational force’ is not sustainable over time, and if not corrected with significant changes to law and policy, the reserve component’s ability to serve our nation will diminish.”<sup>232</sup> The GAO echoed these comments, stating that “DoD does not have the strategic framework and associated policies necessary to maximize reserve component force availability for a long-term Global War on Terrorism.”<sup>233</sup>

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<sup>232</sup> Commission on the National Guard and Reserves. Second Report to Congress. 1 March 2007, 38.

<sup>233</sup> Government Accountability Office, *Military Personnel: A Strategic Approach is Needed to Address Long-term Guard and Reserve Force Availability*, GAO-05-285T (Washington, D.C.: 2 February 2005).

Therefore, current force policy is inadequate to sustain a long war against terrorism as well as provide more conventional defense roles. Careful consideration of future force development and force employment policies, as well as the costs involved, is going to be critical to sustain an effective national defense system. This CBA is just one tool intended to help clarify the decision making process.



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